

Little End Road, Eaton Secon, St Neots, Camb el-(04801215005 Teles 32514 COMART (

The ultimate media choice Comart Coma

ACCESS MANAGER **DIGITAL** RESEARCH vector KENT, TN2 5TH Phone: 0892/45285 Talex: 95441

Thursday, October 14, 1982

Shares in build plant STC go up for sale

Cables has followed the announcement of its withdrawai from System X production with plans for the sale of 40% of its shares owned by its parent ITT. STC says the events are unconnected.

The sale, which is to begin this week, is the second biggest ever conducted by the London Stock Exchange. If successful it will bring ITT £210 million, while reducing ita holding to 35%. Previous sales of 10% and 15% of the shares were made in 1979 and

ITT chief executive Rand Araskog said the sale was consistent vith the company's policy of seeking public ownership for tele-communications aubsidiaries serving predominantly local markets. He also said that if the company could not be number ooe in the bulk production of System X, it was not prepared to be number two making something to another productioo. They will carye up an

company'a design.
-- STC-makes 60% of its sales to British Telecom. Its inItial compensating for withdrawing from the System X programme is to be s £100 million increase in orders for the TXE4A computer controlled analogue exchange which it de-

veloped and has started delivering. Possibilities for its future involvement in public switching in the UK include the speculation that it may tie up with LM Erics-son to sell a version of Ericsson's

LINE NOISE !

by John Kavanagh
THE bigh-flying office automation company, Wang Laboratories, is teaming up with Stirling University in a £38 million plan to build computers on the Scottish university's campua.

The new factory will bring 700

The new factory will bring 700 jobs over the next five years. It will make a broad range of proby Donald Kennett Axe digital exchange which leads STANDARD Telephones & the market outside North ducts, although details bave yet to be finalised: the company says its 65% growth rate in the UK means it needs to be as flexible as But STC executives say the market will not be particularly profitspossible to meet the changing ble because prices will fall rapidly as volumes build up. By 1987 System X production was expected Wang's products include a 16-

Wang to

at Stirling

bit microcomputer, 32-bit minis and complete office automation aystema, including voice message At the same time, the company is going to the market with an expected increase in sales of 12% this

nitial £250 million worth of

British Telecom orders between

them and will then compete for

further business both in the UK

The BTS consortium has since its foundation in 1979 concen-

trated on generalised promotion of

System X, handing over to a de-

tions not more specific.

DISGRUNTLED with the Socialist policies of French Prime Minister

Mitterrand, IBM is understood to be taking a close look at its European investment strategy. And the UK could be the beneficiary of the distrust of foreign companies across the pond. Government ministers, including Industry Secretary Patrick Ienkin, will be visiting Havant soon for "discussions". Jenkin said last week in Brighton that the dominance of

IBM does give the government cause for concern, but he stressed the company was determined to be "a good chizen" wherever it is. The government keeps "very closely in touch" with IBM, he said, and he

assured his audience that the company had been of enormous benefit to

ACORN'S noxt microcomputer offering, the Electron, looks like missing out on this year's run up to Christmas. Problems with yields of the ULA at the

heart of the £150 32K machine make it likely to be January or February before the machine is available in significant numbers.

THERE are strong indications that users of the new ICL DMl distributed mainframe will be offered a choice of operating systems. Not only will the much-maligned VME be available, but TME as well. And a

third, far more illustrious operating system is set to make a comeback on

ALL is still not well with DBC's authorised terminol distributor programme. The company is discussing new proposols with the dissatisfied UK distributors. There are five terminal firms and two authorised industrial distributors.

THE much-heralded Alvey report into how the UK is going to beat the

THE much-heralded Alvey report into how the UK is going to beat the Japanese at their own game over the next five years has so far caused about as much reaction in the UK computer industry as a loud long yawn. According to sources close to Whitehall, Minister for IT Ken Baker was hoping that Alvey would recommend positive collaboration with the Japanese, but not come up with an open-handed demand for money which the government bas all along made plain was not going to be available. In the event Alvey has probably collected himself a hail and fairewell for ignoring both sides.

ACCORDING to reports coming from the US, the BTG is now considering o sell-off of the Immor factory in Colorado in order to fund the operation of Newport. The reports follow to far unsuccessful ottampts by Immos director Richard Petris to raise private finance in the US last year (see front page story).

the machine destined to take ICL into the 1990s. Its name? George 3.

signated lead contractor as negotia-

This arrangement has not led to

computer science department year and a rise in pre-tax profits from £50.6 million to £63 million. and we are sure there will be cooperation and research spin-offs," and a Wang spokesman. "And 40% of the staff will be Repercusatons from the changes to the System X team range from a renewed possibility of gaining £16 million in government funding for graduatea in management and engineering jobs, so it makes sense to be linked to a university." development work aimed at export markets to the probable disband-ing of the British Telecommuni-

The apokesman added that most of Wang's business came from the South-East and the faccations Systems consortium which STC was a partner. tory would give it a greater presence in the North. Under the new arrangements Plessey and GEC will take over responsibility for development and

The company's only other major manufacturing centre outside the US is in the Irish Republic. It has recently announced expansion plans for its Limerick factury which will take the workforce to 800. It also has an electronics factory in Talwan.

A Scottish Office apokesman said the move confirmed Sentland's position as the electronics manufacturing centre of Europe. Companies ranging from IBM and NCR to Motorola and Nippon Electric have big nperations



GRANT . . . "We ore sounding out members to draft our own response."

IBM users still angry

IBM's response to the Computer Users' Association's criticism of its pricing policies is described as unsatisfactory by CUA chairman

ohn Grant. "We have had a written response from IBM which was not completely satisfactory. We are sounding out Council members at the moment with a view to drafting

our own response."
It seems unlikely that IBM will vithdraw any of the price increases and described by the CUA as "exploitative". The CUA wrote to IBM complaining that price in-

creases this year had raised costs by 14%-15%, and added that this was unacceptable since both inflation and interest rates had fallen substantially since lBM'a last price Increase in February 1982.

The CUA nsked why, in the light of lower interest rates and single-figure inflation, 1BM found it necessary to raise prices on n sixmonthly bosis. In fact, the August risc represented the fourth significant price rise in little over 15

The significance of the last price rise is that IBM has increased the costs of using its top-line 3081

Hunt cable report eagerly awaited

by Donald Kennett PUBLICATION of Lord Hunt's report to the Home Office on the proposed national wideband cable network was eagerly awaited earlier this week.

Potential investors wanted to bear that the arrangements would be stable over a period long enough to get them into profit, probably 20 years at the less, and that there would be few restrictions to inhibit cable publishers.

Potential service operators such as Racal-Oak, Tesco, Debenham,
Thomas Cook, wanted to see arrangements that would foster the
fastest possible growth in subscriber numbers.
British Telecom and its unions

wanted to see the greatest possible opportunity for BT's involvement in building the network, so that it would enhance rather than undermine iovestment in its telecom-

ning resources.

switched star networks.

At the same time BT is calling on the government to take over much of its £3,500 million debt so munications and data networks.

The broadcasters were conhat it is not immediately saddled cerned to protect their over-the-sit interest charges of £500 milscrvices from excessive competito a year as well as dividend rements to shareholders, ladustry Secretary Patrick Jention for scarce advertising

revenues, audiences and program is wants to introduce the con-Hunt was asked to report a social and commercial implication ing legislation to sell off BT next seth. If it gets through by July, specified, he is expected to auch as the above-mentioned and to make recommendations on it me under increasing pressure has backbench Conservative MPs sues such as whether there needs o be a separate body to regulate wart the share sale as soon as the industry and whether service providers should be allowed to operate their owo local networks.

The government's original inration was to push through the sale that the election, which could be as late as 1984. The But a major area for concern has been whether the network or net works should be based oo opdcal fibre or coaxial cable and whether they should be in the form of an unswitched tree or a hierarchy o

The ultimate

media choice

rie End Road, Eston Socon, St Neots, Cambi 5450) 215005 Teles 32514 COMART

American de Coman group of companies

BACKBENCH Tory pressure to all off British Telecom before the

set Geoeral Election could cut

the value of the company by 25%.

And the suggested move has added fuel to the opposition of British

Telecom unions, which planned a 14-hour strike yesterday (Wednessay) against the plans to sell 51% of British Telecom to private

Comart

Telecom 25%'

A Department of Industry spokesman said Jenkin had no in-teotion of issuing the shares before the election. But he added, "No one can foresee the date of the election. If it is well into 1984 that is a long time to wait and some backbenchers are saking, 'Why wait?' If the election was very late the Industry Secretary would need to cansider the polltical

'Tories could

cut value of

Leader Comment - Page 15

Douglas Hawkins, analyst at the stockbroker James Capel and Company, said, "Given that Labour would renationalise British Telecom if it won the election, the early sale of the shares could reduce expectations by 20% or 25%. It' may well be even more drastic. The small punter in particular would be terrified of buying." well be even more drastic.

Hawkins did not think the government would go for an early sale. "I see no advantage for the govern-ment," he said. "It would be better to be able to offer an attractive package after the election.

sale. Three of the six unions - the 130,000-strong engineers' union, the POEU, the 30,000 BT members of the clerical CPSA and 7,000 people in the Society of Civil and Public Servants - were expected to support the call for one-day strike. The three other unions, representing mainly oran-agers and supervisors, did not strike but are strongly supporting

Thursday, October 21, 1982 Number 831 35p

Labour leader Michael Foot, Shadow Industry Minister Stanley Orme and TUC general secretary Len Murray were due to speak at a rally in London. Marches were ulso planned for other cities.

the campaign.

The POEU walkout was expected to have the greatest effect on users. National organiser Bert Brewer said 30,000 members alone handled scrvice faults. No faults or equipment installation would be dealt with. The CPSA walkout would mean no bills would be

"A day's strike is only a hiccur in business but it's just the start of our campaign," he said. The unions will be lobbying MPs and

European doubts on UK data

DOUBTS whether the UK's pro-

The implication at the Fourth nnual Data Protection Commisloners meeting was that there are several shortcomings in the White Paper. But no one would go as far as to say that the proposals, if passed into law, would be insufficient to ratify the Council of Europe Convention on Data Protection. The UK is one of the aignatories to the Conversion

natories to the Convention. Attention was drawn particu-

The data protection commi

Software File

Dowotime/Liveware

ales and Marketing.

Job Vacancies..... 32/55

eader, Letters Workplace/puzzler ... French micros Special Effects



protection plans

posed data protection legislation will meet the requirements of the Council of Europe were voiced last week. At a meeting of interna-tional data protection authorities in London, the government's White Paper on data protection failed to get a clean bill of health.

larly to the exemptions on access to information held by the security forces, and the exemption of such computer systems to registration Concern was also expressed about the proposal that there should be a one-man data protection authority in the UK. In most of the protection legislation, there are multi-member authorities.

sioners, representing Sweden; Denmark, Israel, France, Austria, Norway and West Germany, re-fused to be drawn about the

Buoyant CMC to take on more staff HEMEL HEMPSTEAD-based Computer Machinery Company last week announced a 56% increase in orders for the nine months ended September 24 and is to boost its ataff. Some £32 million of sales has been achieved compared with £20.5 million for the same period last year. The company, a subsidiory of US firm Microdata is planning to increase its headcount by 300 in '750 jobs may go' ABOUT 750 jobs will be loss and 140 offices closed if the Inland

proposals, even though in most cases the legislation that they en-force in their own countries goes

much further than that proposed

countries the multiple member commissions contain a security

nvolving the security services.

Honeywell boom HONEYWELL'S profits are booming, but it is selling fewer computers in the US. Third quarter figures released last week showed income up 35% to \$43.8 million, compared to \$32.4 million. for the same period in 1981. Chief executive Edson Spencer said that

Revenue accepts proposals to cen-

tralise income tax collection at its

twn big ICL 2900 computer instal-lations in Cumbernauld, Scotland, and Shipley, Yorkshire. The proposals are being considered by management and unious.

ACCESS MANAGER

RESEARCH

VESTO

ชารีรี THE PANTILES

11S computer orders are down "substantially".

Bureau sale MOBILE radio firm Air Call has bought 75% of the UK's largest DEC bureau, Allen Computers International, to gain more computer expertise. Air Call is part of a major consortium bidding for a licence to provide a computer

cleared member who has the authority to check on disputes Eire on the MAP

THE REPUBLIC of Ireland is m Jan Freese, the Swedish Com-nissioner said: "In Sweden there launch a MAP type awareness programme to encourage Irish busiare no exclusions, though the subject's right of access may be nessmen to make more use nf restricted in some circumstances."

Private backing for Imperial College software venture

Meanwhile BT unions were

Imperial College Software Technology or IST, plans to be a link Imperial College, who is chairman of the company.

Imperial College Software Technology or IST, plans to be a link Imperial College, who is chairman of the company.

Citing the fragmentation of the significant work in this country on software engineering, with the significant work in this country on software engineering, issuing "amphasizes Imperial College" who is chairman of the company.

Citing the fragmentation of the significant work in this country on software engineering, issuing "amphasizes Imperial College to the company.

Citing the fragmentation of the significant work in this country on software engineering. ky, Pactel, and Imperial College Ladon. They have founded a new ompany, Imperial College Soft-vite Technology, which will meet

cauly published Alvey Committee

and develop innovations in software technology, to make a profit

The software company bopes to
sploit academic research in the
tommercial marketplace, one of
the main recommendations Alvey
made in the report on the future of
the UK computer industry.

expects 1ST, which will identify
and develop innovations in software technology, to make a profit
from sale of consultancy and serfrom sale of consultancy a the UK computer industry.

ege "We will be a commercial organisation," emphasises Jim Feeney, managing director of the company and past head of Hoskyns. Feeney and develop innovations in soft-ware technology, to make the context of the significant work in this country on software engineering, Country on software services and development tools to reduce software technology, to make the context of the company.

Citing the fragmentation of most of the significant work in this country on software engineering, Country on software engineering, Country on software services and development tools to reduce software technology, to make the company.

Context of the company.

Context of the company.

Context of the significant work in this country on software engineering, Country on software engineering.

Context of the company.

Context of the significant work in this country on software engineering.

Context of the company.

Context of the significant work in this country on software engineering.

Context of the company and past head of Hoskyns. Feeney and develop innovations in soft-ware technology, to make the context of the company and past head of Hoskyns. Feeney and develop innovations in soft-ware technology, to make the context of the company and past head of Hoskyns. Feeney and develop innovations in soft-ware technology, to make the company and past head of Hoskyns. Feeney and develop innovations in soft-ware technology, to make the context of the company and past head of Hoskyns. Feeney and develop innovations in soft-ware technology, to make the context of the company and past head of Hoskyns. Feeney and develop innovations in soft-ware technology, to make the company and the significant work in this country of the signifi

Cost-Effective Communications

A COMPLETE RANGE OF X25 PACKET SWITCHING EQUIPMENT FOR PRIVATE TO PUBLIC NETWORKS

X25 To ASYNC X25 To IBM 3270 X25 STAT MUX X25 SIMULATOR TESTOR

AND MONITOR

TRIPLE X PADS

Dynatech - Nolton

Commitment in Communications

Nolton Communications Ltd Fleidings Road, Cheshunt, Herrs, ENB 971 Tel: 0992 - 33555, Telex: 28952

Tops goes up market

by John Kavanagh
THE government's Tops training
scheme has gone up-market and is
backing 15 unemployed university
graduates on a Master's degree course in software engineering. The students, mostly engineers,

are specialising in robotics, image processing, automatic testing and other applications for industry.

and we selected the 15 for training for employment, not just for their suitability for the course," said Hugh Sharp, head of computing training at the Manpower Services Commission, which runs Tops.

away from purely basic training

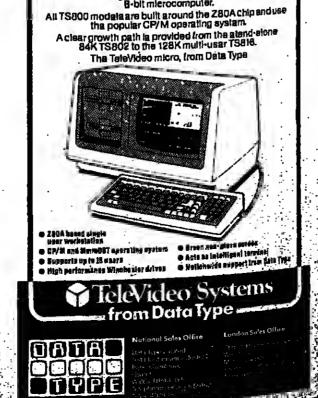
and to put more effort into meet-ing the skill shortages at higher levels. This course will do something to help overcome the shortage of engineering people with software skills."

Sharp said the scheme did not overlap with the normal procedures for putting people on Master's degree courses. Applicants had to be at lesst 27 years old.

The students are attending the course at the Institute of Science and Technology in Cardiff. The MSC is paying the course fees and a Tops allowance to the students. Normally the Tops scheme i "I'm keen for the MSC to move and who have been in work or unemployed for two years.







Top men at odds on cabling of UK

by John Kavanagh
CONFLICTING views on the
schedule for the proposed cabling the top men in two companies with close interests in both the business and domestic user markets.

Mike Aldrich, head of Rediffu-

aion Computers and a co-author of a report on cabling published by the government in March, said the country should go ahead with cabling as quickly as possible. He told a viewdata conference that digital data services could be available to up to 76% of housebolds through a cable network by the

end of the decade.

But Brian Manley, managing director of Philips Business Systems in the UK, said the gov-ernment should hold fire for technical and economic reasona, at least until 1985.

Like Aldrich, the Hunt Com-

ment to make an early start and isaue licences in 1983.

But Manley, giving his inaugural speech as chairman of the Iostitution of Electrical Engineers' electronics division, said cabling technology was not sufficiently developed to provide fully interacuve, user-to-user services.
"The government should think

beyond 1985, when the technology will be sorted out," he said. Consumer spending trends

consumer spending trends could also hit the cabling plans, Manley said. "There is certainly no economic justification for cabling in 1983, even if it were technically feasible. And I question whether it will be economically viable just for cable television. There is strong compension for consumer spending from other entertainment areas.

machines were still there, he said. At the same time the government's micro education schemes meant many schoolchildren were learning about computing. As a result the groundwork for demand for home information services was being done and there would be fast

Eighties.
Aldrich saw data services to the home bringing a new breed of people: "knowledge workers" who would pioneer the idea of telework" and work from bome

He said that the knowledge worker would be a manager or professional who would be receptive terms of convenience, fun and life-



Hunt Committee sets out franchising guidelines

THE Hunt Committee has said pany or consortium would then be that interactive bonking and responsible for the work of the low up complaints. But it would ahopping services are desirable but cable layer, service providers and not normally regulate or scrutinise should not be mandatory in cable programme makers. networks set up under a proposed

franchising system.

A new cable authority formed to award franchises to local network operators and oversee their performance is one of the main recommendations of the Hunt Committee, which reported to the government last week on the effect of cable services on broadcasting.

The franchises would be to cover areas with up to 500,000 awarded on a competitive basis to allow the best package of proposals to be picked. The operating com-

Announce the

UPGRADES

910/912/920

Televideo™

925/950

VT101/102

Lear Siegler

Adds"Vlewpoint

DEC"

Wilkes Computing

NEW GENT

RETRO-GRAPHICS

FEATURES INCLUDE:

• 4010, 4014, 4027 Simulation

Local graphics intelligence

Polygon drawing
 Area fili

Televideo is a trademark of Talevideo Systama. DEC is a tradamark of Digital Equipment Company. Lear Slagler is a trademark of Lear Salgler Inc. ADDS is a tradamark of Applied Digital Data Systama Ltd.

Wilkes Computing

Tel. (0272) 277399/25921, Telex 449205

Bush House, 72 Prince Street, Bristol BS1 4HU

Arc and circle drawing

Optional 1/0 Interface

Optional Light Pen

Crosshair cursor

programme makers.
Only the operating company,

Interactive services would not be apecifically required, but would be a highly desirable feature of any proposal: The authority would award franchises lasting 10 years initially and eight years on renewal

accountable to the cable authority

the operation of the network, Sanctions would include a re-

quirement to approve advertising schedules or TV programming plans in advance, and ultimately withdrawal of the franchise, In the latter case, an operator which also to sell or lease it to another operator on predetermined default terms to ensure cootinuity of ser-

Lord Hunt said that much of the evidence presented to his committee had tried to sell the idea of "We soon got used to the aound of axes being ground," he said. But the government had asked him to assume the introduction of oew cable systems and to consider how to do it in a way that was consistent with the public Interest and which

broadcasting services.

that the new cable systems would have at least 30 channels, but it did not concern itself with the design of the network, whether it should be based on optical fibre cable rather than coaxial cable, or what British Telecom's role should be. These issues did not affect whether interactive services could be run or whether TV programmes could be delivered astisfactorily, Lord Hunt

They were outside his remit and were being coosidered elsewhere government departments.

the helm of the newly-merged aoft-ware support and field engineering

a position where it could grow for the future," says Sandifer. "The

company is increasing in size and

Hytec wanted to get itself lato

departments.

However, be did express the view that having the whole net-work installed by a national common carrier such as British Telecom would be inconsistent with government policy on competition and on restricting public ex-

Ex-ICL director moves to

01-461 8648

Hytec Microsystems

FTER seven years as a director

of a company employing 25,000 ataff, ex-ICL man Brian Sandifer

slon director of Oxford-based Hy-tee Microsystems joined ICL in early 1975 and headed its technical services until last October when Robb Wilmot's restructuring plan

merged Sandifer's area into the

narketing division.
Sandifer opted for voluntary re-

as moved to one with just 50.

number of channels on o system, and fewer channels than the norm might be provided in less profita-

Some channels should be available for leased use, but central and local government, political parties and religious groups should not bave their own channels. Neither should they be part of any operating consortia.

Franchise areas could be planned io advance by the cable authority or could be part of the competitive proposals. De facto monopolies were likely to exist for some time to come because of the expense of installation and opera-

Speed of installation, channel capacity, size of area to be served and the interests represented in prospective operating consertis



engineering area. I auppose I've got about half the company's staff working for me - it's a lot dif-ferent from ICL,"

Hytec provides interactive and standalone terminal aystems pany has received financial as a consultant. Meanwhile, Hytec mainly for ICL users running was doing some restructuring of its COI, CO2 and CO3 protocols, and support from both the National Enterprise Board and the Industown, and while Sandifer was doing bas developed its own protocols for rial and Commercial Finance Cor-

Biggest Ethernet goes live at GLC by Donald Kennett EUROPE'S biggest Xerox

Ethernet local area network is now up and coming for 144 scientific staff at the Greater Loodon Coun-

It is also one of Europe's first and is funded under the Depar-ment of Industry's office automstion pilot scheme.

The GLC scientists are experienced users of computing facilities based on Digital Equipment PDP. IIa, Commodore Pets and IBM 3033 and 3081 mainframes, but they had not previously used word processing, message communica-tion or other office-oriented facili-

Funded by a £250,000 grant, the GLC system is one of about 20 pilot instellations designed to test the use of advanced equipment io practical applications and to pro-vide user experience for all who could benefit from it.

The 144 staff, on two floors of County Hall, sbare 23 Xerox 860 microcomputer-based information processors distributed through their offices. their offices. There is also a pool of equipment in a central room on each floor, consisting of two Xerox 8011 large-screen high-resolution graphics workstations, an 8045 12page-a-minute laser printer and a 20-Mbyte 8032 file store.

All the staff have been trained on the system over the last six months, and they are beginning to report benefits from the word processing facilities. The Dol re-quires information to be gathered on the growth in the use of the system, the number of documents handled and the oumber of jobs

Scientific adviser Dr Sam Red cliffe says his colleagues are less inhibited about sending imperfectiy composed reports and letters
to the typing pool, because they
know they will be able to retrieve
them and olter them before printing. This means they spend less time on them, and so can get more work done.

The first feedback users gave to Xcrox was that one minute was 100 long to wait for a message to be retrieved from the filestore. Xerox has now cut it down to about six

Future additions to the system are to include an office diary to help organise meetings and com help organise meetings and com-munications servers to provide links with outside systems. The first of these outside systems will be the IBM mainframes, which already support about 500 termi-nals in various GLC departments. The network may later be linked to the business communications

to the business communications system for which 10 bids are currently being evaluated and which will eventually have about 600 terminals in a multi-million pound minals in a multi-million pound

suppliers were started by placing a notice in the BEC Journal. Sixty initial responses have been narrowed to 10 bidders.

IBM set for record results

1BM looks set to confound its critics with a record year in 1982, despite the economic problems in most of its markets and the In the third quarter of 1982 the

company reported profits of \$944 million, a rise of over 36%, and million, a rise of over 3079, and conly a shade under the record \$1 billion achieved in the second quarter. Sales reached \$8.2 billion; bringing the figure for the year to edste to almost \$23.3 billion compared with \$20.1 billion a year ago, \$30 within easy striking distance

Post-tax profits in the nine months reached \$2.7 billioe, 22%

up on the comparable figure in 1981. Net profits for the 1981 financial year were \$3.24 billion. So 1982 could be the year in which IBM achieves the real growth in profits which has eluded it since 1979. The company reports a atrong

order position, particularly on its large system 308X range and its 3380 disc systems. However, the strength of the dollar is still depressing sales and profits.

IBM's chief executive officer, John Opel, claims that sales in the

The standards are a product

standard for modems; two "core"

standards (which apply to all equipment) for safety and for gen-eral provisions for attachment tu

the public network; a standard for

plugs to connect with BT's new-style sockets; and a product stan-dard for simple extension tele-

There will be a period of overlap

to allow manufacturers time to

\$I billion greater than reported with profits \$250 million higher, i



OPEL ... "Profits \$250 million higher if dollar had stayed at 1981 level."

The fourth quarter is tradi-tionally IBM's strongest, and this year the company will atart de-liveries of its 3083 mainframes, coupled with the first normal customer shipment of its new archi-tecture MVS/XA in the first quar-

In 1981 fourth quarter profits were up 50% on the third quarter, with sales up over 25%, on the

The picture did not impress the

Wall Street stock analysts in the

early 1970s. "In good times IBM's earnings would have been up 50% against a year ago," said one

...and takes on French government over \$80 million order delay

French government over what it claims is discrimination in delaying an \$80 million computer order by the State-owned Banque Nationale de Paris.

The bank is keen to buy about 200 of IBM's 4300 range main-frames. But in compliance with "Buy French" instructions to public organisations, the Ministry of Industry is biding its time.

Government officials want the contract to go to ailing CII-Honeywell Bull which came under State control earlier this year

Herve Caron, IBM's assistant general manager for planning and communications, said at the com-Ceotre at La Gaude on the French Riviera: "It is regrettable that we

are not getting a positive answer."

Caron sald President Mitterrand had explained recently that the "Buy French" instruction meant

A thrifty new

by Jack Gee that a French firm should get on IBM has taken issue with the order when its quality and price

Caron commented: "But how can you determine whether two computer systems are equivalent? This policy encourages discrimingtion and distorts the market."

IBM considers the Banque Nationale de Paris affair as a tes case. During the last two years of the outgoing government IBM's share of public sector orders in France dropped from 40% to 19%. A slight improvement has been perce puble in recent months.

In response to President Giscard d'Estaing's discriminatory policy IBM had transferred part of its to Valencia, Spain, because turnover generated by the French subsidiary no longer justified

The Communist-run General Labour Confederation has been spearheading a campaign to persuade the government to give the big bank order to CII-HB.

Dol approves first five standards for privately supplied telecoms kit

by Donald Kennett

THE lirst five standards for priva- months after its formation. tely supplied telecommunications equipment were approved by the Department of Industry last week. Announcing the standards at the Finsacial Times World Telecommunications Conference, Industry Minister John Butcher said that for the first time in Britain, suppliers could go to a completely independent body for the approval to attach equipment to British Telecom's octwork.

No other country in Europe provided this independence in the making of decisions of key commercial importance to companies,

was known that complex standards had taken as long as 10 years to write. The British Approvals Board for Telecommunications (BABT) also deserved congratulations for being ready to take appli-

be added.

He paid tribute to the British
Standards Insotution, for producing the standards barely a year
after the British Telecommunications Act became law, when it
was known that complex transfer. case of innovative equipment standard in order to work, BT may grant opproved If BABT's knowledge of network require-ments is insufficient.

BT may also be subcontracted to BSI's new laboratory which hes been doing testing on behalf of the Dol during the interim arrange-ments will now convert to testing against the new standards.

Butcher added that the general licence for value-added network services (VANS) was about to be signed by the Industry Secretary.
"This is the key which we believe will unlock the door to a host of new services and applications," he tunity to take the lead in key developments in the communications explosion, and this should benefit both jobs and exports."

He also revealed that the operating licence to be given to BT would include obligations to provide rural services, telephone kioska and emergency services from which it often made a loss. At the heart of a job of the Director General of Telecommunications would be the function of policing BT's observance of the condition

BT's observance of the conditions in its licence.

Challenged over the unfairness of BT's having to compete with a network operator which suffered no such obligations, Butcher said he was not at liberty to discuss the debate that was going on over the carrots and sticks necessary to square this particular circle. But perhaps some way could be found to set those costs against a vardstick of general performance and then to offset the costs, I am not saying against tax, but that gort of thing," he saids.







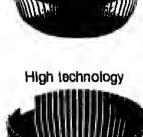
Proportional specing

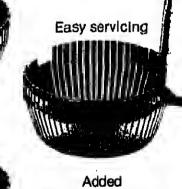


NEC backing

Medium-speed printing











If you're thinking ebout choosing a "daisy wheel" printer, think again. In the long run, NEC's new medium-speed Spinwriter 3500 Series may well be the more cost-efficient choice. Our unique thimble element gives more characters in meny lenguages.

in fect 128 versus the more common 96.

By dramatically reducing the number of: components in the Spinwriter 3500 Series, we've: made it one of the most reliable and cost-effective. printers you can own.

The new 3500 Series also comes with a wide choice of paper handling options and the latest word processing features such as proportional...

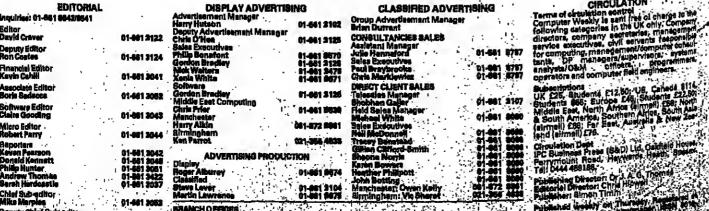
All this and full backing by NEC—one of the world's largest. electronics manufacturers. All point being to Li

For It it and Europe pressed contact the Telescoprocureations a Europe into the Contact th



work for the company, offered him use with Burroughs and poration. Computer Weekly, Quadrant House, The Quadrant, Sutton, Surrey SM2 5AS. Telex: 892084 BISPRS G EDITORIAL

DISPLAY ADVERTISING CLASSIFIED ADVERTISING 01-001 3122 01-441 3125





Political

IT show

parties get

by John Kavanagh
THE National Camputing Centre

Latins link to fight language domination

by Jack Gee THREE French companies have taken the battle against the English

French and Mexican governments ind between Mexico's National Council for Science and Technalogy and three leading French computer service firms, CISI, G-CAM and Sligos, which were not oreviausly active in Mexico.

A jolni communiqué, which follawed a faur-day seminar organised by the French embassy and Mexico's Economic Planning and Budget Ministry, stressed the importance of using other languages besides English in establishing da-

improving efficiency of hordware en-

maintaining the national identity
of each af our countries and to language domination of computers across the Atlantic ta Spanisbdefend and promote all languages, and particularly French and Spanspeaking Mexico. sb, as languages for production Agreements were signed re-cently in Mexico City between the

The French and Mexican gov-ernments added: "The big data-banks and databases which exist today throughout the world were created to meet criteria which applied to the big industrial countries and are not always suitable to deeloping countries.

"It is therefore necessary to give big boost to Spanish databanks and databases in arder to create an independent Latin-American po-

The communiqué stressed the formation in contrast with the one-

on the UK computer industry. The compsny, Kepner-Tregoe, al-

cutting out wasted site visits, said

Kepner managing director Brian

Bentley. Kepner's main successes

are with high technology, engi-

industries are resistant to Kepner's

nethods, and harder to make more

Bentley explained that Kepner

tries to teach a practical manage-

ment philosophy to its clients.
"We haven't enough people ourselves to teach all the managers."

be said. So instead the aim is to

spread good mansgement through

an organisation by teaching it to just a few people.

One of manageroenta biggest

Company doctors aim

management methods

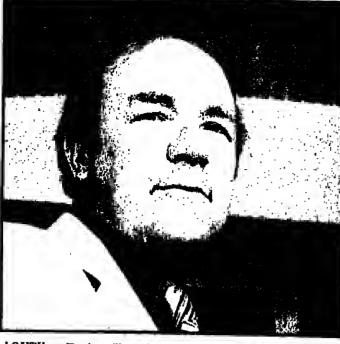
A US company that specialises in problems to recur, and then come

improving the efficiency of large up with the same old solutions. Organisations is making an impact up with the same old solutions. Kepner tries to instil a more posi-

to teach practical

10,000 hours of dstabank questioning this year and to increase this annually by 50%. Most of its infarmstion comes from the US which has five bost centres availsble online. These are Lockheed's Dialog, Burroughs' Orbit, Dsta Resources Inc's New York Times, McGraw-Hill and Biblio-retrieval

France, which made its first en-ity to Mexico last year with Telesystem/Questel, does not expect to make major inroads on American daminance. But it is Impressed by the positive response of the Mexicans to its Initial venture The communiqué stressed the need for two-way traffic in in-



Tandem slips in US as its UK sales double

Bentley admitted that the alisuccess with bardware engineers at stract nature of Kepner's work Digital Equipment and HewlettPackard.

This success was achieved by

Kepner claims that 60 of the 100 top US companies have consulted with a 70% staff increase last year, with them at some time. In the computer industry, the representation is even stronger among the top companies, with clieots including companies, with 1BM and Honeywell.

now turos over \$20 million of busioess worldwide. Early in its developme ot it started to run courses for managers, which Bentley now admits were founded on bad

"We taught them what their problems were, but not how to solve them," said Bentiey. "If we could, we would repay the companies that came on our early faults, according to Bentiey, is a courses," he added.

by Donald Kennatt
THE UK stro of "non-stop" minimaker Tandem doubled its sales to over £6 million this year as its US-based parent company slipped to

peat business tack.

tomers that were likely to expand their applications quickly, he said, and its systems were designed to cater for unpredictable growth pat-

Bob Marshall attributed the drop n increase in sales (from last year's 1% incresse in turnover) to the recession, and to the fact that such high rates of growth get much harder to sustain as a company tive spproach that penetrates the

> from the group, due to be released within the next few weeks, will be well over \$300 million, with pre-tax profits kept within the com-pany's target of 16%-20% of sales. The 60% growth is set against a 40% growth in stsff, compared

> and the sales-per-employee average has stayed around the \$100,000 level, which Marshall claims to be one of the best in the Already the company bas

isproved the dietum of the Boston Consulting Group expert who which takes a company from zero to \$50 million sales will take it into ankruptcy if it is not replaced.

It is aull run by its founder James Treybig and Bob Marahall who joined in its second year be-

Recent criticism in the West German Presa suggested Tandem had reached the limit of ita growth because it had concentrated on large companies and repeat business at the expense of sales to medium-sized coropanies which were the staple of other minicomputer manufacturers. The sugges-tion was that it had now asturated

Marshall confirroed that his target was large companies, but said:
"It is a very large market and we have hardly scratched the surface of it." He also confirmed the re-

The company looked for cus-

The largest Tandem network nstalled is the company's own 350-processor international net-

coropany.

Order entry, manufacturing, personnel, accounting and field service applications run online on to each other's database, many of

According to UK managing

SALES BRIEF Export order BT 'a computer giant by 1990'

by Doosld Kennett
BY the end of this decade British
Telecom will be the Isrgest awner and operator of computer power in Europe. That will give it opportu-nity to build a major software busioess in both the dsta and communications markets.

The prediction came from stockbroker Isn Cole of James Cspel & Co st last week's Finsocial

A more market oriented organisation on the part of BT is needed to exploit the opportunity, he saked, both to employ BT's resources as efficiently and competisubstantial increase in capacity that the Integrated services digital network (ISDN) based on System X would have.

"It is important to sppreciate the televance of the magnitude of increased capacity the ISDN

experienced by women as a result of the growth in the use of compu-

ters were the major issues raised at

The introduction of the

And in the Third World,

workers in the electronics industry

are operating in appalling coodi-

dons, severely damaging their eyes and losing their jobs as a conse-quence. About 80% of these

Figures on how many jobs will be lost through the introduction of

office technology vsry, although a report produced for the Equal Opportunities Commission in 1980 estimated that 64,000 word procea-

wurkers are womeo.

electronic office is both de-skilling

and threatening the existence of

msssive surplus capacity, and price and competitian will be The Mercury alternstive tele-

phone network and the cellular radio markets would be the most significant new competitive forces. But the growth in value-sdded netwark services (VANS) such as electronic mail and transaction services also should be important new

Investment opportunities would rise substantially over the next three ar four years. During the past 12 months the first of the new liberslised markets had begun to seek losns and equity capital to

Small local service companies would probably nurober several huodred in five years' time, while

'Growth in computer industry has

machines would replace one Mittu.

Barbara Kitchenham, who ran

the "What is IT?" workshop at the

conference, said those jobs that

She also pointed out that should

domestic viewdata take off to the

extent that people do most of their

shopping from home, the need for

shop assistsnta (again, moinly

sgents, would also drop sharply.

On a less gloomy note, she said that the low cost of computers

could have some positive effects:

may lead to the establishment of

niore workers' co-operativea as a

visble alternative to multi-national

ters down was contributing to workers' hardship in the Third

World, said eennomist Swasti

But keeping the cost of compu-

The low cost of new technology

women), travel agents and estate

led to the exploitation of women'

accounted for over half the tatal ssles, and they earned an average 10.5% real return on capital com pared with 3.5% far the whole af British manufacturing industry.

These high risk investments far external financing, which and emerging companies with pro- as a whole over the next eight ducts and services for the years. By 1990 the telecommunicauons services market would be worth £12 billion, having grown st 8% compound, and the equipment msrket £4 billion, having grown at

Data services would be worth dealers in telecommunications terminals would probably match the equipment £5.5 billion, both 2,000 or so microcomputer dealers overlapped with telecommuni-

In places like faiwan, Korea,

plnyment tan estimated

in 1975) had made it easy for

multi-national eninpanies in set up

shop and exploit the labour force.
Altout 80% of the workforce in

electronics foctories in the Third

World were women, aaid Mltta.

The aimple reason is that they are

cheaper - they work for about

Employers, however, seemed to

stress that women were used be-

cause of their superior manual dex-

terity. The joh involved between

seven and time hours a day peering

down a microscope to bond hair

fine gold threads on to the circuits

This usually resulted in aeverely

quently rendered the workers

example, 95% of the workforce

40% tu 60% less than mcn."

Mexico and Mulaysia high unem-



Honeywell joins the top-end battle

by Kevan Pearaon HONEYWELL has entered the pattle at the top end of the general purpose computer market with a new water-cooled £2.4 million processor complex. The new machine is targeted to

ormance with IBM's 308X range, and Sperry Univae's top range 1100/90 ayatems. It is available in two versions at the moment, though the company claims to have more powerful versions in the

The DPS88/81 is a single CPU system, with up to 16 Mbytes of memory, costing about £1.7 millinn, placing it between IBM's 3083 model B and midel J.

'fhe DPS88/82 is a dual processor enumplex, delivering up to eight imes the performance of loneywell's pervious top-line system, the DPS8/70, the com-

Brian Long, Honeywell's UK managing director, described the new muchines as Honeywell's answer to rapidly growing market. He said that current estimates showed the demand for raw computer power growing at between 20 and 40% per year. One study in the US estimated that the growth rate could be as high as 60% annually.

Long also said that 1982 promised to provide a record year for Honeywell's UK nperstion. The new machines are based on

different chip technology from that used by other mainframe inanufacturers. Honeywell uses Cttrrent Mode Logie, while IBM and the other US manufacturers Transistor Transistor Logic. The much fcared Japanese use Bmitter Coupled Logic - fast and expensive to manufacture Honeywell claims that CML

is doing its bit to eosure that whichever party forms the next government will know sll about information technology. It had stands at two of the four main par ues' annual conferences and is affering to help them raise money ta pay for its research services. Philip Virgo, the NCC's tech

nology assessment scrvices manager, took a ane-man information technology shaw to the Conserva-tive and Liberal conferences and got an enthusiastic response from the Labour Party for next

Virga feels more computer com panies should be investing in telling political parties about in formation technology for the long-term benefit of the industry.

"All parties are putting together information technology policies but they have no central research sources." Virgo said. "The NCC has the information bur our training packages are priced fo therefore uffering to help them run conferences to raise money for or

Virgo said the cunferences could be on political topies of interest to ousiness, such as the government's use of computing and ways of nc-

Bank to test **Aregon on its** customers

MIDLAND Bank is installing on Aregon IVS-3 private viewdata system for home banking trials with an undiaclosed number of customers during next year.

It has placed a £150,000 contract with Systems Designers to develop protneol entulation and inessage ranslation facilities for links to its existing Burroughs moinframe-based OLCS online system, on which all its banking and accounting applications are run.

ials will be able to coll the aystem such os what transactions have gone through and what standing orders are current. It will not be possible to initiate actual payments

SCICON has sold one of its £9,000 Haspbox/Comboard RJE protocol emulators to Computas in Norway. Computas will use it to link its Digital Equipment VAX 11/780 vls a multiplexed line to the Control Data Cybernet service bureau in Sweden.

Army contract

for medical

MBDICAL systems specialist Nodecrest of Byfleet has won s \$270,000 export contract from s

New Jersey tesching hospital for one of the world's largest nuclear

medicine image processing

The systero will be connected to

four gamma cameras for tomogra-phic studies and cardiac diagnos-

tics and to eight VDUs ta provide clinical and administrative data.

TWO London boroughs bave ordered Datapoint ARC local area

network based systems. Enfield has ordered a £91,000 three-processar system for direct labour

organisation and housing mainten-ance, and Ealing has ordered an £88,000 two processor system for stores control and vehicle fleet management.

SCICON has won a major order

management system for large

processing plants launched in May. The order is from the Italian

State-owned mining company Ss-mim, which will install Teroman

will run on Hewlett-Packard Hi

3000 minia and will be interfaced

to storea systems also running on HP 3000a. Further orders are ex-

GWENT College of Higher Edu-cation has placed a £110,000 order

with Norwegiao computer manufacturer Norsk Data for two NII-100 minicomputers for use in teaching. Gwent College will also

collaborate with Norsk on produc-

ing an Ada compiler. The two minis will support 32 interactive

terminals and the software to be

supplied includes datubase man-agement, graphics and accounting

SHELL Research has ordered

\$6.7 million Cray-IS/530 "super computer" for its laboratory at Rijswiki in Holland. The system

1983 and will be used for seismic

data processing and reservoir

Super Shell

College minis

Mining system

Civic LANs

specialist

Level 6, IBM 370 and 4300, Digital Equipment VAX and PDP-11, Univac 1100, Perkin-Elmer 3200,

£2m orders

MicroBird is available now on the Apple II microcomputer using the UCSD p-system, and on the Onyx microcomputer under Unix.

I am onice has won orders worth over £2 million for a total of 23 million f

Comlink

the second national Women and computing conference, in London the skill was removed from the

we have!

COMLINK offara you a totally supported COM burgau agryles from Diakettaa – IN-HOUSE and IN SECURITY

we have -Dual AGFA GEVAERT COM ayatama with twin 1500/6250 magnatio tapa drivas

and DISKETTE TO MICROFICHE FACILITIES in addition to our highly compatitive fichs/film from magnetic tape services COMLINK can process 8" (200mm) Diskettes in these

formats: 1200mm) Diakettas in telm single and double alded, single and double density ICL ME29
DEC PDP/11

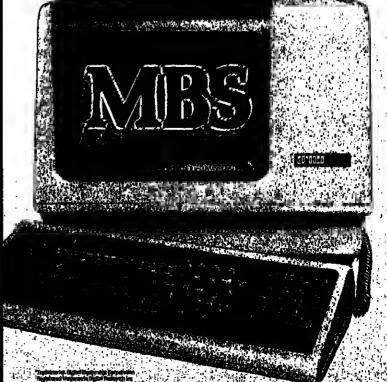
IT REALLY IS VERY EASY TO BE COM-LINKED!

For details of our frae testing earvice, call us on 01-261 4629, or write to:

COMLINK LIMITED, 124 Aldersgate Street
LONDON EC1A 4JO

Swift ** Professional ** Secure





of the industry's most popular printer and video terminals. And now we can suppl

VT125 graphics VDU
As VT100, but with 768 x 240 4 2 graphics,
green acreen, printer port, optional advanced,
yideo.

We're big on Digital terminals



LA12 ports ble printer A compact high speed (190 cps) partsolo plain paper interest printer. Ten international character set plus APL, line

LK34 leve cost petater A 30 cps printing terminel. KSR and RO models, High functionality with very floot forms handling. Dot graphics expeditly.

A 180 cps printer with 45 user selectable
a 180 cps printer with 45 user selectable
a 180 cps printer with 45 user selectable

LA100 letter quality printer

MIS RENTALS SERVICE

If you've got a VT100*, just add the VT18X* Personal Computer option COMPONER!

and you've got a powerful CPM** computer - for only £850. Sounds good? Then phone Rapid Terminals on 0494 26271. backman : of logital Equipment Co
 hademark of Digital Resourch Inc 2 Rapid Terminals 1 STOCK AUTHORISED digital

DISTRIBUTOR TERMINALS PRODUCTS



by Philip Hunter
A TEXT retrieval system that offers microcomputers facilities which until now have been the preserve of large installations bas been announced by the National Law Library Ltd (NLLL). The system will be distributed by Oyez Coroputer and Automatie Information management, and is aimed specifically at the legal

But NLLL says that any small business that needs to recover in formstion from a rosss of docu-

ments could benefit.

The system called MieroBlrd will store free-formatted text on dise or tape, and allows the user to select documents for printing or editing by entering a word, or words contained in it.

Text can be stored in docu-

ments, paragraphs or sentences, and words can be combined in several ways to form search expres-sions, which can be modified if the search produces the wrong docu-

Swedish link

ADVANCED Computer Techniques of New York has won s US Army contract for \$2.3 million to implement and maintain optimised versions of ita Pascal, Cobol 74 and Fortran 77 compilers on machines including Honeywell DPS 6 and

Executive sale

DRG Business Machines has wo a contract which is expected to be worth £400,000 to supply TEC Starwriter Executive 55-chps daisy wheel printers to Technology For Business (forroerly Logabsx) for onward sale with Systime word processors. It has been taking the orinters in small quantities for the

MAI's four-month-old Birmingham office has won orders worth

The Duke of Kent takes over as president at the British Computer Society's twenty-fifth anniversary celebrations

BCS royal charter bid

major step in gaining for the Society the sort of legal recognition that other professional societies and institutions possess — the role and past-president and ex-ICL disease. Hell believes that and institutions possess—the role of providing mandatory qualifications for entry into full membership of their professions.

Here Mandatory qualification in this country. Referring to the

Ernest Morris, incoming BCS vice-president, said that it would

by Goris Sedacca
THE Silver Jubilee of the British
Computer Society last week
brought it a royal president, but
left it undecided on its bid for a
royal charter and increased
recognition as a professional body.
For the charter would be a
major step in gaining for the

computing where the BCS qualifications may be given the force of law, in areas such as census statistics processing or data protection
requirements.

In Singapore, the GCS has secured an agreement with the government that all public enipolovees in computing would be re-

in this country. Referring to the Society's dropping membership figures, Hall said that the answer not be beyond the realms of unagination to find legal applications in



MORRIS . . . Force of law for BCS qualifications?

The BCS began the long process of applying for a Royal Charter at the beginning of 1981 and later that year set up an executive committee to do a feasibility attick. mittee to do a feasibility atudy. Hall said the Society was now four years.

X-ware is a product range, fully supported and serviced by Bell Information.

LOCAL AREA NETWORKS based on products from UNGERMANN-BASS Inc. (baseband and broadband) for optimal integration and sharing of computer resources

■ UNIX based software from INTERACTIVE SYSTEMS

Runs on PDP11/44 up to PDP11/70, VAX and

■ INTELLIGENT TERMINALS for user case within a

Optionally with German or French character set

■ M(STEL, a highly flexible interactive videotex system,

X-ware, a product and service family for friendly extendable and customized computer power.

consulting its memhers on the advisability of proceeding with a petition for the charter but even if they did decide to proceed it was unlikely to be granted in under

'The Reformation has arrived'

by Kevin Cabill THE Oritish Computer Society, 25 years old last Thursday, celebrated

years old last Thursday, celebrated the event in some atyle before an audience studded with Lords, MPs and addressed by a Duke.

The Duke of Kent, new president of the 8CS, told the gathering that computing and the work of the 8ritish Computer Society are of concern not just to the profession. of concern not just to the professionals in the "field", but to us all.

By emphasising the relationship between the data processing pro-fessional, and the increasingly microcomputerised end user world, the Duke set a theme which was raised again and again by con-ference speakers at the Jubilee

Peter Bagnall warned that the age of the Reformation had arrived the computer professional,

Bagnall, managing director of staff and services at W. H. Smith, spoke of the "the age of the Reformation when . . . data processing professionals . . . will be exposed to non-conformism and the practice of our techniques by the

According to Bagnall, "the comfort of a religious order, with monkish programmers and analyst friars, has sustained us through the birth pangs of the industry. Soon staff at all levels within our companies will directly operate both personal aystems and the subsystems of the corporate

structure and time which beset

Gagnall did not think the transi-tion would be comfortable, "The movement towards end user involvement is inexorable and one which has been anticipated and promoted by the professional computing fraternity as well as by the manufacturers. The user friendly attributes of the new order will however, bring with them a host of professional and social problems which we and the companies we serve are not well prepared to

Bagnall saw computing staff having to deal "more and more frequently with the half-educated and half-informed — the professionally immature."

Most of the present generation of computer systems were equipment dominated, according to Bagnall, who said some of the characteristics of computer professionals would make the reorientation towards true user friendliness much more difficult.

"Becouse computing requires total precision and lengthy design and implementation periods, ways of thinking which ore alien ood incomprehensible to our colleagues, and an approach to prob-lems which often seems ponderous to them, have developed.

Bagnall suggested that computer vision, and identified with the machines and will have to come to computer rather than the company terms with the disciplines of and its commercial requirements.

Telecoms authorities 'obsessed with speech'

y Kevin Cahill

HE national relecommunications authorities have been slow to recognise the real needs of computer users because of their obsession to provide apeech communications services. The view was expressed by Charles May, Gritish Telecom irector of research, at the OCS

ilver Jubilee conference. While gently criticising the communications industry, May nought the obscasion was a correct one, since "their main revenue traffic has been and still is overwhelmingly that between human beings communicating by speech".

The convergence of technology, particularly computerised digital and digital based telecommunications hardware, had pravided solutions for the communications enlutions for the communications en-gineers which made the transition from speech driven systems to digital systems much easier, according in May. He said there was a similar need for, "a convergence in thinking between the professionals in computing and telecommunications."

Returning to the theme of end user involvement set by the Duke of Kent, May said that the need for convergent thinking was a reconstructions.

convergent thinking was urgent because the computer user was no longer a professional prepared to spend time and effort in training himself — or frequently berself — in how to get the best out of a machine. The modern user was meeds."

MAY . . . "Slow to recognize real needs."

someone who saw it as a "tool of the trude" and, just like all other tools, expected it to be as easy to use as possible.

This, May said, posed problems for the telecommunicator too. The traditional computer was becoming a dispersed machine, with ter-minals probably themselves having intelligence and storage, needing to communicate with each other and with remote files, printers, sensors, mass storage devices etc. It must be simple to use and easy to learn.



Hazeltine Clearance

Esprit I Esprit | **£315** Exec 10 £510

£275 Exec 80 £700

ABACUS ELECTRONICS p.l.c. Comma Division, West Horndon Industrial Park; West Hordon, Essax CM13 3XJ Talaphone: Brantwood (0277) 811131 Telax: 888788

System 38 attack on the mini makers

by Boris Sedacce

1BM is set to launch a full-scale
attack on minicomputer manufacturers with lts System 38.

According to Mike Newman,
managing director of Interactive
Database Systems, the first stage

Database Systems, the first stage in 18M's strategy to regain market share in small business systems came with the launch of the System 38, which is better functionally designed than offerings from the minicomputer manufaction than the systems of the systems. turers such as Wang's VS, Hewlett Packard's HP3000, and Digital Equipment's VAX.

Now 18M wants to make the

System 38 cheaper and a better performer than anything else. "It will be like the 4300 which blew a hole in the lessing market and the 1BM look-slike industry," said

the recently-announced top-end System 38, the Model 7 which has roughly the same power as a 4341



NEWMAN . . . IBM is reluctant to announce a separate System 36 range.

Group Model 2. Newman expects about 50 of them to be installed by year-end, bringing the total System 38 population in the UK to

"One user who has taken de-livery of the machine says it is now the way it should have been from the beginning. He said that a batch run of MAAPICS, 1BM's manufacturing control package, previously took 36 minutes to run out now goes through in 13 minmaterials explosions on-screen,

"MAAPICS was converted to System 38 from the smaller, conventional architecture System 34 and uses batch routines like terminable sorts, and so on."

Despite the demand for a machine to bridge the gap between the 34 and the 38, Newman believes IBM is rejuctant to announce a separate System 36 range because a new desk-top machine is in the offing for 1984/5 which would obsolete it and the System by Jack Gee TRANSPAC, the French dars project switching network, has had

to stop accepting new subscribers in the Paris area for the past six

weeks because equipment

suppliers are unable to keep abreast of demand.

to be able to resume new connec-

Connections for provincial aubs-

Transpac hopes to ease its

tions in the capital shortly.

SESA, which designed Transpae and supplies its soft-ware, has been encountering delivery problems because of its success in scooping worldwide orders for data packet switching net-works. Austrslia, Brazil, New Zea-land and Luxembourg are SESA

Management of the network, which is owned by the French Ministry of Posts, Telecomms and Telediffusion (PTT) says it hopes Disappointment with Transpac's failure to meet demand was expressed at IOM-France where the new networks and sercribers are continuing without in-terruption at a rate of 100 s week. vices manager, Gustave Barth, said: "Our shipments of interface A Transpac official said: "We have a special problem in Paris because 2,500 of our 7,000 dediequipment to French customers using Transpac are being delayed by the network's inability to

cated lines are operating here. Transpac also has between 3,000 handle traffic demand."
He scided: "Transpac is growing too fast in a complicated technical and 5,000 gateway users who access via telephone, telex and slow speed terminals." environment. It is extremely sensitive to traffic load. At IOM-France we are worned about the complexheadache when three new ity of dialogue between computers switching nodes are brought into and Transpac's switching nodes.

The IBM manager said his company was often handicapped in res-ponding immediately to customer complaints of rejection because of difficulties in tracing the source of

IBM announced interface pro ducts as soon as the French proclaimed the strival of Transpac. Two years later, when the network went into service in 1978, a wide range of products had been developed for the Transpac X25 protocol ar IBM centres in

Kingsron (New York), Raleigh (North Carolina) and Torontn. Since then, further interfaces have been developed by IBM-France at its research and development centre at La Gaude, oear Nice.

Transpac'a capacity has risen from 1,500 subscribers in 1978 to 1,100 as the target for the end of

'Golden age' in 1990s predicted by Sinclair

y Kevin Cahill

ONLY war and government in-terference can prevent the arrival in the 1990s of the most golden age man has ever known, according to Clive Sinclair.

decline in a decade.

He also pointed out that 29% of the workforce is producing only 23% of the gross national product, and that by the end of the next

Speaking on the 60C programme "Futures" to a less-thanenthusiastic panel, Sinclair said that as fully intelligent machines appeared in the decades following the 1990s, individual wealth could rival that of a Roman emperor.

Sinclair noted that less than 2004.

decade he expected less than 1076 of the workforce to be involved in manufacturing.

The vehicle for this new golden age, according to Sinclair, would be in the creation of thousands of small innovative companies in 17.

Ken Gill, general secretary this collection of the secretary than 1076.

Sinclair noted that less than 30% of our workforce is now employed in manufacturing industry, a 15% it was not like that at all.

Ken Gill, general secretary of white collar trade union TASS, said he had been to California and

SYSTEMS & PERIPHERALS

WHY BUY LOOK-ALIKE? WHEN EVETS SELL THE REAL THING - AT LOOK-ALIKE PRICES

VT100 (including-AVO+PrinterPort)

Additional Special Educational Discount for all Universities and Colleges

Other D.E.C. equipment available at discount prices include:-

11/23; 11/23+; 11/24; 11/44+VAX^e

eg: 11/23 with 128kb memory plus- 2×RLO2

(10mb diak drive) 4 aarial lines, power supply+cabinet

only --- £10,000

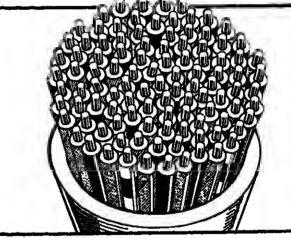
Computers Limited 123-125 Green Lane, Derby, DE11RZ.

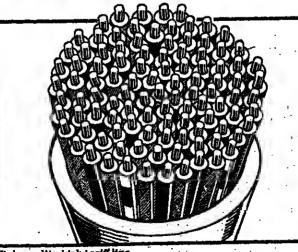
(M) Trade mark of Digital Equip. Corp.

VETS (0332)

The second of the second secon

£960 - ex stock





High quality, high lariff line.



Business Systems

PHILIPS

Michige Will your for the sematrans 2424 moders.

in line tariffs. But not the Sematrans 2424 modem from Philips. It makes the most of any link, giving excellent full-duplex operation on PSTN or low tariff two wire lessed lines at 2400 bps. And you don't have to be an accountant to see the

big savings-up to 30%-made possible by renting low tariff instead of high tariff lines.

With no loss of quality.

The 2424, with its unique technique of echocancellation associated with four phase differential modulation, allows use of the entire band width. This provides full duplex operation with excelient immunity from noise and distortion for your data.

Act now to reduce your running costs, courtesy of Philips. We design, develop, supply and service a wide renge of modems for every operational requirement

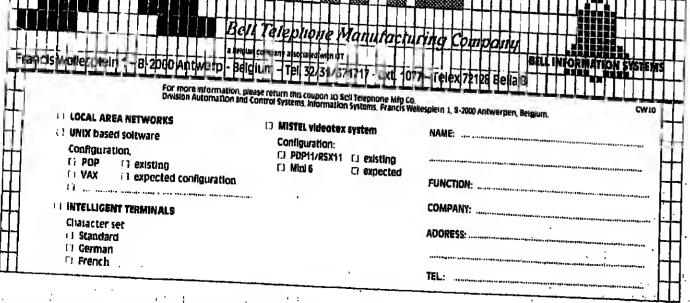
For more details on the 2424, and the comprehensive Sematrans range of data communication equipment from Philips, transmit the coupon immediately or ring



am interested in lass	purchase	
lame		
osition	فيدللها	
Company		Sale Age
ddreaa		
	and interest of the second	

Philipa Businass Systems, 🤈 Communication and Control Division, Cromwell Road, Cambridge, CBI 3HE Telaphone: Cambridge (0223) 245191

MAKING BUSINESS SENSE OF OFFICE AUTOMATION THROUGH VOICE, DATA AND TEXT HANDLING.



The country's biggest think-tank

Compec '82 is about ideas, decisions, short and long-term planning. It's the largest computer exhibition in Britain and it's designed specifically for the people who use computers; D.P. professionals and general management alike. Compec '82 is the one place you'll find the whole range of products and services available in today's professional computer market. Complete systems, processors, components and subsystems, peripherals, terminals, communications equipment, ancillaries, consumables and services of every kind. Plus a special emphasis on software in Compec's Software Village.

The Computer Exhibition, Olympia, London November 16-19, 10.00-18.00

10.00-16.30 (final day)

order your tickets in advance

Surrey SM1 4QQ. Please send me £1.50 each.	32 is by registration at the door and costs £3. But you may obthe privilege price of £1.50 by ordering them on this coupon. Incein UK £ sterling must reach us not later than October 29. S. IPC Exhibitions Ltd., Surrey House, 1 Throwley Way, Suttandarice tickets for Compec 82 at the privilege price of £ sterling payable to IPC Exhibitions Ltd.
Job Title	
Company	

MICRO NEWS

Sony tries for own standard

HOPES that the muddy waters of microfloppy disc standards were clearing have suffered a set back. Sony, looking good as the leader in the sub-four inch disc format with a 31/2-inch system, submitted its own basic design to the ANSI stan-dards committee, rather than supporting the proposal based on that design put forward by a group of US and European drive and

media suppliers. Sony's action took the group by surprise, as Sony had been working with those companies to prepare the standard presented to ANSI. The group, which styles itself the Micro-Floppy Standards Committee, has many salient drive and media companies in its membership. These include Verbatim, Shugart, Micro Peripherala, BASF and, and recently joined. and, and recently joined,

A design supported by these companies, backed by current market leader Sony, would be well placed to win general acceptance.

Chalrman of the US group, Ver-

batim's business planning manager Charles Payne, says that he was surprised by Sony'a move. "We thought they had agreed to go along with our design," he says. Sony's view is that there was no change of direction on its part, rather that Payoe's group had mis-

anter that rayoe's group had mis-understood the position.

Although Sony incorporated some of the changes to its current 3½-incli design that the US group favours, including support for an 80-track configuration and inclusion of an automatic shutter, there is still a major difference in the type of disc media and in rotation

Sony uses 100-microinch thick discs, rotating at 600 rpm, while the rival proposal goes for 40-50 microinch discs running at 300

Micro is 'four times speed of **IBM PC'**

IT IS not often that operating speeds for micros are quoted in mips (millions of instructions per nips (minutes in instructions per second), usually because they get nowhere ness this fast. But now an American machine, built round the Motornia 68000 microprocessor, has appeared on the UK scene, with a claimed apeed of two mips.

apeed of two mipa.

Benchmark teats put it at four times the speed of an IBM Personal Computer, and 14 times that of an Apple II. Such apeed will open up new application aresa, allowing large financial models to the run and giving scope to expert systems.

scope to expert systems.

The Sage II, marketed in thin country by TDI of Bristol, runs the 68000 at S MHz with no wait states, using fast (150ns) 64K dy-namic RAMa to keep pace. It comes with the UCSD p-system as its standard operating system, but is a general purpose compu-ter says Sage founder Rod Cole-man, and will he able to run under other operating systems.

Digital Research is currently

working on an implementation of CP/M-S6 for the machine.

Coleman, who designed various Z80- and 6502-base computers before the Sage II, set up the company Sage Computer Technology with two others, Bill Bonham and Bob Needham, in August last year. Sage II was the result of three years' "armchair decient" arms. design", says Coleman. "I always wanted to bulld this

computer," he saya, "but held back hecsuae of the expected major announcements from the Then when these appeared thay were just a succession of 1977

vintage machinea really."

The concept for the company was a machine with 10 Mbytes Winchester, one Mbyte RAM was a machine with 10 Mbytes Winchester, one Mbyte RAM and the S MHz 68000 all on one board, he says. But a fire in January important but which Sony does not see as a significant problem. It also would use standard types of media already being made.

"Verbatim, BASF, Dysan and others already make this sort of media," says Shugatr'a general manager for venture projects, Yoshi Ahara. "It has better performance and gives scope for the future."

was a machine with 10 Mbytes Winchester, one Mbyte RAM and the S MHz 68000 all on one board, he says. But a fire in January played havoe with thia plan, as most of the deaign for the hard disc machine was loat. "We needed shaance, and had committed to sppearing at the West Coast Fair in mid-March, so put in a lot of effort on the floppy version."

The show was only 47 days after the fire, but Coleman managed th arrive there with nine machines, software and ali.

Micro News is compiled by Robert Parry

favotred technology for the future has gained momentum with Intel's adoption of a new CMOS process derived from its NMOS tech-nology HMOS-II. cuit elements can be a major prob-From modest beginnings - two lem in closely packed ICs, and moving to CMOS is the easiest way of combatting the problem.

week - the new CHMOS (the "H" is for high performance) process will grow to be used in more than half the company's new products by 1984, across all product areas. "There's s revolution going on," ssys Intel's microcontroller

THE semiconductor industry's flight towards CMOS as the

on," says Intel's microcontroller operation marketing manager Joe Baranowski. "1983 will be a year of many new products in CMOS."

Many major manufacturers have already hitched their wagon to CMOS technology, notably US rivals Motorols and Nations!

Semiconductor but it is never too Baranowski sees price parity between the NMOS and CMOS Semiconductor but it is never too lste providing you come in with the right technology, says processes by 1985.

The close similarities between

Intel sets its sights

The main spur is the insistent

It comes out of Intel's HMOS-II process, and gives the same per-formance and density but with a

on CMOS technology

volume production, and put it squarely in the line of process de-velopments from NMOS through HMOS in 1979 and HMOS-II in need to bring down power con-sumption of chips and so be able to crant more devices into smaller 1981, to 1982's CHMOS and next

This next development will follow the trend of most of these Intel claims that its new process is ss dense and as fast as any of the few advanced CMOS processes transitions in shrinking dimensions by about 20%. The aim is 1.5 micron channel length rather than available on the market, and con-aiderably better than most CMOS. the present two microna.

Baranowski calls this progression from HMOS to CHMOS technology synergy", and sees the new process providing the essential power-dissipsting shrink path for very large scale integra-tion. He sees CHMOS soon taking It is more complex, needing 12 process steps rather than HMOS-li's 10, and so more expensive, but over many current IC applications

In the past, the tendency has been to introduce new process technology to memory circuits, he Baranowski.

HMOS-II and CHMOS helped in-tel get the new process into high terfaced to the real world.

ducts - naked runners that don't need other chips around them."
All microcontroller development is in CHMOS now, he adds, with the recently introduced 16-bit 8096 being the last NMOS product.

Other products will follow on soon, with CHMOS moving into all other product areas. These will include EPROMs and EEPROMs. as well as "leading edge memory products, by the middle of next year at the lateat," says

do Il air late

INTER-KNOWLEDGE MEANS BUSINESS FORMS AS INDIVIDUAL AS YOUR COMPANY.

Most people who make computer stationery have a stereotype image of their customers.

So their stationery tends to be stereotyped too. At NCR, we know different: no two companies work alike. So in order to produce business forms, magnetic media and operational supplies that make your work easier, we have to know how you

That's the origin of NCR Inter-Knowledge, a deep understanding of the companies we serve.

It means business forms that are designed and manufactured to enable the people using them to operate in a more productive way

NCR Systemedia products are compatible with the majority of computer systems, so why not find out more about the advantages?

They're not just paper promises

NCR Inter Knowledge. Getting it right by knowing your business.

Indispensable to the decision-making process lease contact me with full details of the NCR Sy Sarvice and how it can benefit my business 206 Marylebona Road, London NWI 6LY



Not all printers are as advanced as they're cracked up to be.

We've just introduced the NDR 8000 series of high quality matrix printers for data and word processing to our range So for a printer that doesn't crack up and a hetter price with ational service, choose Logitek - the advanced upo.

Clioose logically, Sales Office,
Logick House,
FREEPOST, Wignin,
Lance WN6 DBR

81: (0257) 426644

SOFTWARE FILE

Hallmark brings success to ABS

by Philip Hunter
THE Waking systems house ABS
Computers has leapt farward in
the busy commercial applications
market after allying itself with
software bruse Hallmark.

The result is a new applications software package called Absolute, for which ABS provides the hardware and systems software, and Hallmark the applications

ABS already has a series of commercial packages, some written by itself, some by Hallmark. But the new system has better communicatinns, says ABS sales director John Parnell, and can link terminalbased software using the CP/M nperating system, with a database

on the main computer.

Parnell explains that ABS has always looked for lucrative links with other companies. "We've slways acted as honest brokers."

Alisolute offers the usual range of modules, including salea order

that the scope of the applications software it has contributed is unexceptional. "But the methods are not," claims its managing director, David Rates.

The typical ran DP user cannot cape with a set of building blocks to create his own systems - he does not know what he wants. But equally, says Rates, there must be

The secret of Absolute is that it allows the customer in choose his application, and then modify the vstem with customer parameters,

Absolute will be supplied as at and ard on the ABS MX Series of business minicumputers. "The nim is to meet 80% of fundamental accounting and recording needs,"

Much of the other 20%, adds Parnell, should not be compu-terised anyway. "Ynu will agree

is to try and put literally every-thing on the computer."

A data link called Transient from ABS supplies some of the missing 20% of fundamental business needs, says Parnell. This enables CP/M software to process data at a terminal from a database on the main MX computer. The data can be returned to the main database after processing.

ABS is one of the companies

chosen by the Department of In-dustry in develop an Office of the Future. The multi-terminal MX Series already pravides word processing facilities, and electronic mail with filing and retrieval in expected in be added soon.

Hallmark was one of the first UK companies to specialise in commercial software after its formation in 1974. The first link with ABS was in 1976 when ita ManuMark system was put an to the ABS Multibus range.



PARNELL of ABS ... "We've always been honest brokers."

Software cash

US SOFTWARE houses have been given £1½ milling in the last four months under the Depart-ment of Industry's Software Products Scheme. Sn far 23 software firms out of the 32 that applied have had their applications for

CP/M menu gives confidentiality

by Andrew Thomas CP/M users concerned over file

security should be interested in a new user-configurable menu system which provides password protection on any options. Log-ging facilities keep track of all file access attempts, whether successful or nat.

The security information available in any program loaded and run by the package, Visa-80 from the Middlesex company Mediatech, allowing such facilities as user-dependent reconfiguration

of applications.

This enables the system to be configured in such a way that selections and required by apecific users are actually removed from the menu. Similarly, confidential applications will simply ant appear in the menu, and the permissions system prevents their use even if

the keywords are known.
Visa-80 also provides a useful
back-up log which serves as both
an index of what files are on each disc, and a monitor on how ald the actual disc is.

Thus ald discs approaching the end of their reliable lifespan can be

replaced before they begin to give problems, rather than waiting un-til the system crashes.

Viaa-80 also scares in the area of multiple capies of files and programs an a single Winchester disc. Whereas previously files for different users were stored in separate finppy discs, the required disc being laaded as and when re-quired, the use of fixed discs ca prove problematic when seven different versions of the same file. are required.

For example, the psckage allows up to 16 different companies so-counts ar 16 independent word processing systems to be stored in the same Winchester, each having individual passward protection and document confident Vina-80 requires 26K of disc

space, and provides no main memory overhead, according to Mediatech director Clive Butler. Response times are not affected by the package," be say, "because Visa-80 is only called nuce, at the start of each mean

All this for a mere £69. Every home should have one.

Software registered on disc

A REGISTER of microcomputer software us being built up by micro distributor Encotel Systems for sale on floppy discs at £10 a copy. The company sees the register as useful for end users and as a cheap form of advertising for software suppliers, which pay £50 a year for their entry.

"We have a team of penple on the project and we are searching."

every possible source of informa-tinn," said marketing director Bill Bostock, the brains behind the re-gister. "We have around 300 systems registered but we want to give all program writers the chance

ity depends on our willingness to nclude packages which compete

with nur own products."
The register, Snftsource, gives brief details of each supplier and application and lists the machines



and programming language, its price and the cost of the manul. Entries are free for the first year. Users pay £10, and Encotel deals £5, for each issue. The register will be produced every two mooths. Encatel, formed two-and-ship

by John Kavanagh A REGISTER of microcomputer

the project and we are searching

"We are taking an impartial view of the register - its credibil-

years ago, now has a turnover of it million and 30 staff. It is a distributor for Televideo, lotered, Superbrain and BMC Oki mion-NOW DIABLO FROM RAPID TERMINALS,

The speedy way to a quality printer dvantages of a sealed Winchester-type platter with So phone Rapid Terminals today, and take the daisy route to fully tested products, ex-stock deliveries, and total support Everything's looking up with the new GEC 4190. For more Information contact Tony Matthews (Ext 3799) or for Export, David Finlay (Ext 3807) Southern Tel: (0494) 26271

Northern Tel: (0270) 627605





ADAPTABLE

32-BIT PRICE/PERFORMANCE?

SOME ECONOMICAL FACTS FROM PERKIN-ELMER

Our new 3210A. Custom build your own 32-bit system. Fully functional chassis-mounted.

OEM PROCESSOR

Fully functional, chassis-mounted, 510KB high density memory, choice of cabinet size, options include DC power system, air cooling, floating point processor, add-on memory.

OUR OFFER Basic system

ONLY £20,000

POTENT

the range, offering mainframe performance at prices

16 bit systems. Interested? Read on.

below what some people are still paying for out-of-date

Our new 3250 high capacity

MEGAMINI Up to 16MB directly addressable memory, I/O capacity 40MB/sec, peak system bandwidth a record 64MB/sec. Higher throughput and faster response than any other comparable

OUR OFFER

PLUS

machine.

Typical system with 1MB memory, console, 80MB disc, dual density tape, FP processor battery back-up, 10 communications ports, O/S.

The unique range of Perkin-Elmer programming

including the industry's fastest FORTRAN with the

packages- private viewdata, accounting, financial

productivity aids and high-level languages,

world's first Universal Optimising Compiler.

There's a full range of third party application

planning and many more and, of course, full

ONLY

298,000

support nationwide.

FAST

£34,580

SMALL

Our new 3210.

OUR OFFER

ONLY

Our new Reliance Plus

Advanced comprehensive

TP/RELATIONAL DATABASE Management System

A complete 32-bit minicomputer just 30 ins high.

with cartridge disc drive, fixed and removable

Basic system with 1MB memory, 32MB disc,

INTEGRATED SYSTEM

storage. Up to 4MB directly addressable

memory. Supports up to 32 terminals.

O/S,10 communications ports.

For the progressive user, system specifier and OEM,

moving up to 32-bit performance is suddenly a lot easier.

We've achieved some major price breakthroughs across

Integrated database, in-line data dictionary, centralised data definition, query language, nonprocedural report generator, COBOL or FORTRAN, unlimited growth potential.

OUR OFFER

Package deal with 3210 processor, 1MB memory, 96MB disc, RDBMS, data dictionary, TP monitor, query facility, COBOL.

£53,500 (Terminals & printers extra)

EDUCATIONAL

The only fully manufacturer supported 32-bit

UNIX

the world's best timesharing system. Exceptionally easy and fast application development, optimised response performance, vast range of time-saving O/S-linked utilities.

OUR OFFER

To educational licensees, special packaged deal with 3210 processor, 512KB memory, 32MB disc. Edition VII UNIX, Source Code Control system, full screen editor, word processor, FORTRAN 77, Pascal, BASIC, C, Berkeley enhancements.

ONLY £29,990

*UNIX is a trademark of Bell Laboratories.

For more facts, call Fred Mascarenhas on Slough (0753) 34511, or complete and return the coupon.

To: Perkin-Elmer Oata Systems Ltd. 227 Bath Road Slough Berks
Please let me have the full facts on: 3210 Name_
3210A Company
RELIANCE Address ☐ UNIX Telephone No.

PERKIN-ELMER



56C

by an astonishing 70%.

Up: performance.

Up: reliability.

further enhanced.

Down: price.

emerges as outright winner

Up: capacity.

Always a major strength of the GEC 4000 Series computers, reliability on the new GEC 4190 has been even

As a consequence of high technology components

development costs, the GEC 4190 offers substantial savings

performance ratio, the GEC 4190 is revealed as well ahead

ol the field. When you consider the other advantages, it

Taking advantage of the latest developments in microchip technology, the GEC 4190 uses 64K RAMs contained within the CPU to provide modules

ol 1 Megabyte of main memory on a single board.

The compactness of the new GEC 4190 has given a significant boost to power conservation. In

some cases power consumption has been reduced

In its present 32-bit, 64K RAM form, the GEC

4190 turns in an outstanding performance, but this

Down: power consumption.

coming on-stream, and stringent measures applied to

over comparable equipment. Taking the price-to-

GEC Computers Right from the start

The ups and downs of the

new GEC 4190.

is only a taste of what the future holds. For Instance, the basic store boards are designed to cater for 256K RAMs. When these become a commercially-viable proposition it will be relatively simple to build 16M Bytes of main store into the CPU.

The GEC 4190 is July compatible with all the machines in

the GEC 4000 Series and enjoys the lacilities afforded by the

Incorporating the main memory into the CPU has

resulted in the machine being reduced to just two cabinets. In a typical 4M Byte system for example, the new GEC 4190

takes up just one third of the space of the GEC 4090.

In addition to the wide range of peripherals available on the GEC 4190, a new option is being offered in the form of an 8 inch Winchester type

This achieves a 38% price improvement

compared to conventional discs, and combines the

award-winning 'Nucleus' central executive.

Up: peripherals.

removable disc cartridge.

Down: size.

GEC Computers Limited Eistree Way, Borehamwood, Herts WD6 1RX. Telephone; 01-953 2030 Telex: 22777







COMPANY NEWS

NMW slip on eve of listing

LESS than six weeks sway from its planned Unlisted Securities MarThis would imply that the contket placing of sitsres, Nantwich-based NMW has produced six-months profits slightly down on

unusually high proportion of au-nual profits turned up in the first transaction processed.

the previous year.

Turnover at £1,350,480 is marginslly up on the previous year's £1,271,292, white profits fell £77,000 to £305,529 compared to the same period last year.

Right Johnson, MAW granging. the same period last year.

Brian Johnson, NMW managing director, says that the lower profit is because in the previous year an account of the previous year and the company clurges a fee for each



Single circuit board design and the use of the same high

quality components in all TeleVideo Ierminals assures

high reliability and perfor-

5. Using is believing.

All our models are designed for maximum user

background and a black-on-green, non-glare,

Let TeleVideo put its expenence and leadership to

work for you, and help solve your business needs with

ferminals whose performance and quality have made us

TeleVales cauthorize Lefistributers offer sales and service throughout Europe. For more information contact DATATYPE TERMINALS LTD. That fel. Lkintarian Industrial Park. Cwinforan, Gwein, Wides, MP44 3YE, Telex. 497906. Phone 9(5):33(2)[6]: MIDLECTROPHTD Mellectron House. Light data from the Left beauty to the English.

John chain Road Belper Derby England Telex 377879

TeleVideo Systems, Inc.

arpeans they produce a man so that the state of the same and they are said the same and they are said the same and the sam

comfort Every TeleVideo terminal offers fine character dot matrix, sharp contrast between characters and

so you get the best

performance out

easy to read screen

the market leader

hone 077-352-6811 -

transaction processed.

The current year has shown a more normal pattern, Johnson says, and "the result is almost in the first half of this year despite in the first half of this year.

US recession takes its toll of leading computer companies

per share in profits, ia conserva-

to lose more, according to Labe.

share, is a distinct possib

IN the grip of the worst recession since the 1930s, America presents a mixed picture, with a number of the same of \$2.78

a mixed picture, with a number of computer companies suffering alongside their more traditional engineering cousins.

Amdahl Corp, the leading US plug compatible supplier, is still experiencing delivery and engineering problems with its new 580 machine. cash, Labe is forecasting a profit for 1983 of over \$70 million.

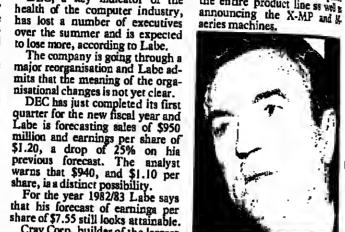
Eugene R. White, company chairman, recently said that the corporation was just "two ECs (engineering changes) away" from full specification performance. According to Peter Labe, the

computer industry analyst with New York stockbrokers Smith Barney Harris Uphsm, this means that early mschines stready de-livered to customers will have the change fitted retrospectively on site and new customers will have the changes already installed in machines when they are delivered

in the first quarter of 1983.

Labe is forecssting a very low profit for 1982, around \$7 million, compared with \$25 million in For the year 1982/83 Labe says that his forecast of earnings per share of \$7.55 still looks attainable. Cray Corp, builder of the largest and fasteat computers in the WHITE . . . "Just two ECs away But he remsina confident about

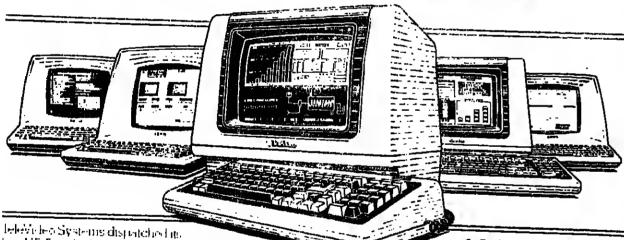
Despite warnings earlier this year from Aindahl's treasurer that 1983 would see a heavy drain on The company's founder, & mour Cray, has resigned his earn tive offices and is now a consist to the corporation. Cray has dealer to the corporation of the corporation its Boulder laboratory and reprint the entire product line st well a announcing the X-MP and y-aeries machines. DEC, a key indicator of the



Why TeleVideo is the world's leading supplier of computer terminals.

4. Built with the

best components.

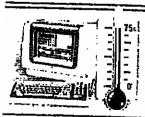


first VIDI's only three years, acro, and today sells many more terminals than its closest competitor Excellent performance and competitive pricing have carned us this leadership position.

1. A range of terminals that sets the quality standard.

Our complete prostuct range offers features to suit your respurements, from our conversational 910, through our smart 925 and 950 models.

2. Our reliability rate is the highest in the industry.



Stringent controls at every step from design to delivery assure high quality Checks metade live days of thermal cycling and testing

3. Fast delivery/No waiting.

Because we hold stock of all our VDT terminals, we are able to dispatch no later. than the next day we recoveyour order No other in mules three can make that claim:



Rejected US supplier bounces back in UK

FOLLOWING the debacle of its departure from the arma of UK based Case Ltd, US word processor supplier NBI has bought up the Case-created operation to market the NBI products in the UK.

According to NBI president Thomas J. Kavanagh, NBI feels positive about the expanding po-

integrate them into the enting NBI operation which already be

following investment of about t

SHARES TABLE MALE

selected computer companies that reflect the state of the computer industry.

19	18.	Slock	Piku	i nge				ess
High	Lon	1		, nile	1-18		Magh	PREA
230 123 237 124 363 710 350 421 1244 47 310 184 305 920 470 593 837 97 97 97 98 93 468 93	152 150 18 101 445 236 2797 31 38 272 215 110 218 670 298 343 343 343 374	GEC (28 h) GEC (28 h) GEC (28 h) Asiamaroc (10 l) Asiamaroc (10 l) Asiamaroc (10 l) Monsec (10 l) Mo	120 100 30 100 87 173 480 110 276 100 276 100 276 100 276 500 571 283 60 60 67 122 383 68	7 10 -11 -10 -11 -10 -12 -12 -13 -13 -13 -13 -13 -13 -13 -13 -13 -13	2014 2014 2014 2014 2014 2014 2014 2014	604a	Auto (Aut Pro Internalia Internalia Internalia Internalia Internalia Internalia Compania Compania Compania Compania Compania Internalia Interna	10111111111111111111111111111111111111
90 208 187 262 60 159 170 108 120 258 105	63 74 180 246 48 112 85 43 76 190 85	OTHER MADEETS* Bus Comp (16p) Consult (Caff 116p) Inf europe Tech (20p) Inf europe (10p)	83 196 187 247 60 140 126 12 104 80 80 83	- 0 +13 - 2 - 0 - 0	6814 2644 29 4634 2014 34 2012 2012 2012 2012 2012	40 2 17 4 16 6 18 7 14 21 10 4 10 4 10 7 10 4 12 7 12 7 12 7 12 7 12 7 12 7 12 7 12 7	Nistional Semi NCR Parkin Elmer Prime Reymann Signal Sparry Cora Storage Tesh Tendern Tandy Texas Inst Tymbere Weng Lab B	SALES SEE STATES

The table thous the closing prices in London on Friday and in America on Thursday. Index is based on the prices of the UK companies in the table. Highs and Lous have be where necessary. where necessary. "Shares traded on the Unlisted Securities Market or under Rule 163(2)(a).

	ı	ı	ì	Т	Т	Г	Г	Т	т	Т	т	т	7	-	7	_	7	_	_	-	_	_	_	_	-	_	_	-	_	т	г	П	П	1
115	┝	╀	+	4	╄	L	Ļ.	L	L	L	l,	_	'n.	١.	ı	ı	•		,	l	l	١.		ı	•	1	1	ı	ŀ	L	L	Ц	Ц	4
110	L	╀	Ļ	1	L	L	L	L	L	Γ	ľ	'n		9)	•	ņ	ļ	Y	θI	'n	0	ņI	-	r	t	t	t	T	T	Γ	L	Ц	Ц	1
103	Ļ	Ł	Ļ	Ļ.	Z	Ľ	1	۲	K	Г	7	٢	١	Γ	T	t	t	7	木	₽	Ļ	t	-	H	┢	t	r	T	Ţ.	T	Π			1
100	L	L	L	L	L			Ţ	Г	7	T	r	T	T	1	F	þ	ŕ	t	H	H	۲	H	┝	H	t	t	t	t.	T	T	П		1
095	L	L	L	Ł	L	L	L		Γ		Γ	Ţ	T.	r	۲	t	t	t	✝	H	H	H		۲	H	†	t	r	r	Γ	Γ	П		1
090	_	L	L	T	L			Γ	Γ	Γ	T	r	r	┢	t	t	t	t	┢	\vdash	┢	H	H	-	t	┢	۲	t	Ė	٢	T	П		Ţ
086	L	L	L	L	L			Γ	Γ	Γ	Ī	r	r	H	ŀ	┢	┢	H	┝	Н	┝	1	Н	-	┝	H	H	┝	F	r	1	П		1
080	Ļ	L	L				Γ	-	-		Г	r		┝	H	t.	H	┢	┢	H	-	H	Н	-	۲	-	-	ŀ	Г	۲	П	П	1	Ϳ.
075	L	L	L	L					Γ	Г	М	۲	F	H	H	۱,	┝	H	H	Н	H	Н	Н	•	┝╌	┝	H	۲	H	۲	7	7	1	
070	L	L	L	Į.			·	Г	Γ	Г	Н	r	-	Н	┝	┢	۱-	-	-	Н	H	Н	Н	Н	Н	H	Н	H	Н	H	П	٦	7	1
085	L	L	L	Ĺ				П		П	-	ŀ		H	H	┝	H	┝	Н	٠,	H	H	┪	-	H	-	H	۲	H		H		1	ľ
J		L	L	Į.	IJ				Γ	Ħ	Н		H	-	·	-	H	-	ŀ	Н	Н	Н	┥	┥	Н	Η	Н	۳	H	H	·	1		Į
		A	l) Est	4.3	17	14	Ju S	2; 4	8	,	2 t	2	1		TI Au	6 2	03	3 6	٢.	3 2	02	? 4	ا 11 ا	 1 0	82	٦		N	12	22	9 6	13	46	¥7.

positive about the expanding po-He did not specifically refer to the UK, however, where NBI will forthcoming.

The shares table, which is specially compiled for Computer Weekly, the

51/ck 51 ACT IAPD Com 128pl 50 BOC int 128pl 18 B B Boc int 128pl 16 Chubb [120pl 16 Chubb [120pl 17 Chub Croup [125pl 18 Extel [12pp] 18 Extel [12pp] 19 GC [12pp] 19 GC [12pp] 10 Kalematoo 10pl 18 Monaco	730 109 30 109 30 109 400 173 480 110 480 1213 74 10 275	1 7 10 10 11 11 11 11 11 11 11 11 11 11 11	15-4 2014 2014 2014 2014 1514 1614 1614 1614 1614 1614 1614 16	18 1115 21 1115 2117 2117 2117 2117 2117 2	Arrelabl Applicate Applicate Applicate Applicate Applicate Long Ante Company Company Company Company Lapping	PARTY SESSION	ちかなる 内もものしぬ
51 ACT IAPD Com 128pl 50 Bit South I 28pl 60 Bit South I 28pl 60 Comb I 28pl 60	109 38 100 84 173 480 110 480 1213 74 10 275	- 10 - 10 - 10 - 10 - 10 - 10 - 20 - 20 - 21 - 21	2014 2014 2014 1014 1019 2019 3014 6319 2019	18 11 5 12 12 12 12 12 12 12 12 12 12 12 12 12	Appla les. Auto Pau Pro Introught 1 - mp A-s-s Comp Science Combined Combined Combined Combined Combined Combined Combined Combined Onto the setal	77 15 10 14 17 17 17 17 17 17 17 17 17 17 17 17 17	(Andread - A
50 BOC im [28p] BOC im [28p] BOC im [28p] Chubb [20p] Chubb [20p] Colo Group [25p] Colo Group [25p] Colo Boc in [28p] Bot in [28p] Bot in [28p] GEC [28p] GEC [28p] Lt [25p] Bot in [28p] GEC [28p] Moriano in [28p] Moriano in [28p]	109 38 100 84 173 480 110 480 1213 74 10 275	- 10 - 10 - 10 - 10 - 10 - 10 - 20 - 20 - 21 - 21	2014 2014 2014 1514 1519 2519 3614 5319 2619	18 11 5 12 12 12 12 12 12 12 12 12 12 12 12 12	Appla les. Auto Pau Pro Introught 1 - mp A-s-s Comp Science Combined Combined Combined Combined Combined Combined Combined Combined Onto the setal	77 15 10 14 17 17 17 17 17 17 17 17 17 17 17 17 17	(Andread - A
10	197 197 197 198 198 198 198 198 198 198 198 198 198	- 200 - 410 - 410	40 2 34 1 600 7 36 14 34 34 18 34 18 34 22 36 44 23 46	62 1 1 1 1 2 2 3 6 3 4 2 2 3 6 3 4 2 2 3 6 3 4 2 2 3 6 3 6 3 4 2 3 6 3 6 3 6 3 6 3 6 3 6 3 6 3 6 3 6 3	Detapoperus Detapoperus Elic Data Sva Elic Data Sva Hon Automatina Hania	完全中国 BG BB BB BB T BET BET BET BET BET BET BET	\$\$\$\$ [] " · · · · · · · · · · · · · · · · · ·
1704	Muhhasti Jagi Mimarasi 1981 13 681 Mimarasi 1981 Mimarasi 1981 13 681 Mi	Multi-heart 175p1 Adult-heart 1	Mornet 100 Mornet 170 Morn	Action Color Col	28	10	1

	Start with one,
+++++++++++++++++++++++++++++++++++++++	you could
	end up with a network
28 R 9 15 2030 6 13 2027 4 11 18 26 8 15 22 36 3 3 0 0 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	

Company News is compiled by Kevin Cahill

AUNIVERSE OF COMPUTING ON A DESKTOP.

Avoid the threat of desktop computer clutter with a CTL Workstation. Choose from a whole family of universal, compact, software driven computers that provide flexibility, economy, power where you want it - in stand-alone or distributed intelligence configurations.

Modular in concept, with networking capability that's virtually plug-in, CTL Workstations allow you to start in a small way and grow – adding more power as you do.

And the CTL Workstation offers substantial storage, excellent ergonomic design, complex video display plus these multi-functions:

- Real-time, 16-bit multi-tasking operations
- COBOL, FORTRAN, BASIC and Pascal
- Advanced WP, forms and spread sheet planner
- Stand-alone, clustered or wide-area network configurations

...With the CTL Workstation

- Multi-Key ISAM on shared databases
- Asynch, I8M 3780 and 3270 emulations
- X25. SNA and Electronic Mail
- Soft Font and bit-mapped graphics

High performance and low cost entry models are available - with one-off systems starting at £5,600, building to clusters of 16, or networks of 255 Workstations.

For more information about the CTL Workstation, just post

Attention: Roger Fulton Please send literature or Please contact me for ar		
Name	Job Title	
Company		
Address		
Tetephone	Ext	



PLATFORM

How the services industry can keep



down the dole queues

THERE are currently 1,000,000 mature intelligent individuals registered trading companies in who, for the price of a secondhand registered trading companies in the UK, ranging from the large multinational ICI type corporation through to your local corner shap. Of these I would estimate that only 10% use a computer to control their "business critical" processes such as accounting, fixed assets, trading control and statutoty re-

The computer software services industry has concentrated on mini and mainframe computers in panies. Even with this market, the software services industry is some 20,000 people under strength and yet the UK has over 3,000,000

people unemployed.

The microcomputer is now maturing in its usefulness in business applications and there is a much

Given that this pot-pourrl of facts exists, it would seem that some gentle guidance is required to point everybody in the direction of each other before they start bumping into each other and knocking themselves out! Part of this guidance is provided with this guidance is provided with training by the ever-increasing use of computers in schools, which means that over the next few years our academics will be armed with a fair knowledge of computing and an ability to talk in Basic, Pascal, or some other programming lan-

In other countries, particularly the US, unemployment of reasonably articulate and educated individuals has been kept down hy the creation of an envisible services industry. Pick up a phone in the US at any time of the day or night and you can get almost anything from a Kentucky Fried Chicken to

Could this happen with the UK computer services industry? I believe that it can. We are developing

Operator comfort? Who cares? Well, from the scene pictured

does not give much eredence to all

the hoo-hah concerning such mat-

ters. Why is the operator doomed

to spend most of each shift on his

Perhaps this scene of torture

stems from an over-active ad man deciding that all future Wang kit

should conform to the REC stan-

Or perhaps the answer is more

simple. A new race of Oriental

super midgets who can work 24

hours a day, seven days a week,

but for inscrutable technical

10 YEARS AGO

dard sizes for washing machines ..

DOWNTIME

car, can buy the equipment for the development of software carried development of software carried out within their own homes. These independent authors have one great advantage - the more they work, the more money they make.

There are, of course, problems breakdown in production stan-dards and the protection of users (and auppliers) from the promises of over-enthusiastic technicians who, with eyes glazed, explain the simplicity of saving milliseconds in file access time due to a unique database management indexing and retrieval system, but forget an

One answer to these proble has already surfaced under the maotic of software publishing, which is bringing the growth of a

However, the services to be probe much more carefully defined than they have been and certainly widened from the straight broking

These companies will need t draw upon the expertise of compu-ter personnel technical authors, contract negotiators, marketeers, salesmen, administrators and legal

Through the creation of such service companies, providing indi-vidual attention and the introduction into business practices to these young executives, it will be of the professional marketeers and managers that we are so desperately short of.

Brian Cudby

Operators reduced to

What now for the man who formulated Maggie's policies?

IT would be an exaggeration to credit John Hoskyns with being the brain behind Msrgaret Thatch-er's political brawn. But his be-

er's political brawn. But his behind-the-scenes influence certainly
had a formative effect on Conservative economic policy in the run
up to the last General Election.

Before becoming involved with
the Conservative front bench in
1975, Hoskyns' formidable intellect was largely responsible for
building the international Hoskyns
Group.

empire to the US Martin Marietta Corporation and began his work on economic policy. He then met Alfred Sherman and Sir Keith Josepb, with whom he beld intermittent informal policy meetings until 1977. By then he had met Tbatcher, Howe, Prior and company, and submitted a formal proposal on domestic and econo-

mic policy.

Clearly they liked what they beard, for Hoskyns was given a full-time appointment and became head of the No 10 Policy Unit after

He retired in April in the belief that the post needed someone more interested in politics in the run up to the next General Elec-

"Policy interests me more than he has several times

He had no full-time job waiting for him, although be has expressed interest in taking a few direc-torships in the information tech-

But since April much of his time seems to have been devoted to selling Conservative policy in the media. In a Times article under the "Will the Utopians ever learn to live in a real world?", be argued against "the politics of envy," and put the government

case on public sector pay.

He later replied in *The Times* to critics of the original article and argued: "As far as general living standards are concerned, it does not greatly matter if we have to pay more to a handful of ludges, civil servants, and generals" — unleas trade union activists make it matter by constantly drawing public

never one to leave grsss unmon when head of the Hoskyns come ter group, which be founded in the mid-1960s as a firm of manage meot consultants.

In the late 1960s and early 1970s Hoskyns followed a ruthle growth and acquisition trail, and launched its Systems Management subsidiary in 1968. This was the first of its kind in the UK and began working in close lisison with the National Computing Centre to develop software msnagement techniques and undertake research in hardware selection.

Hoskyns scored several other notable firsts during this compute dawn. Again in 1968, Hoskyns installed the first UK computer, an ICL 1901, to be used exclusion. vely for commercial and production system development.

companies to the loys of prof

Then to cap a great year, he launched one of the first "competer appreciation in schools" pro-

Early in 1969, he took the then unprecedented step of attacking the Yanks with UK computer technology, giving a seminar in New York hotel. Here he unveiled yet another first, his Segmentel Level Programming, which we already being used by British Leland at Cowley on an ICL 1500.

In 1970, Hoskyns Systems & search offered a replacement for the time-honoured flowchart called Tablemsster, a decisio table. For the first time we hand company boasting of "reduction in programming time of 60%" - the sort of claim of which set are now

After this growth slowed down, and by 1971 Hoskyns suffered from the recession that then his the computer services industry. It is sued redundancy notices to some consultants on the education side.

But there were to be more to cesses before the 1975 US to the Police National Computer Project, for which Hoskyns wa

THE COMPUTER SCREWE UP THE STATIONERY ORDER AGAIN

PAPERLESS IN the wonderful world of computer games, where monsters lurk waiting to drive a million parents bananas as their offspring moopolise the family TV set - thus preventing the grown-ups from playing with Prestel - a catchy name is vital. No one is going to pay good money for a game called Chartered

Mushroom management

Chad has not actually seen the said confection, but the use of the word "giant" is silttle omionus. If Wang's tape deck ergocomics are anything to go by, the Iron Lady will probably bave to stand on Dennis' shoulders to cut the thing.

Comes a new term for everyone who have one step ahead: was happening as his firm was sold to Zygal Dynamics. "It was a case of mushroom management," he said. "That's where they keep you in the dark and pour b*lish*t all over you."

Alien Doomstar Attack, or Tony Benn Meets Attila the Hun. THE Swedish inability to deal Russian submarines must paint a some fundamental failure of its I asked a colleague for his opinion on two of the new Vic 20

> in-depth(I) probe into the call rassing ease with which Rei to can sneak in and out of the waters, and come up with s

up oo them.

Quadrant House, The Quadrant, Sutton, Surrey SM2 5AS, Thursday, October 21, 1982

First 25 years of the BCS

AN organisation which has survived for 25 years may well have good cause to celebrate. But if one standa back a little from the euphoria of the British Computer Society's Silver Jubilee, one may detect a more aggressive body emerging.

Measured against itself, the BCS will say that it bas done more than survive - that it has "prospered" for 25 years: 26,000 members, 42 branches throughout the country, and

But placed in the context of the industry as a whole, the growth of the BCS has been unimpressive. True, it has provided some outstanding leaders and industry captains. but few employers regard non-membership of the BCS as a serious obstacle to filling a senior position in computing.

While the appointment of a royal personage to the post of BCS president will be regarded as a quaint little English eccentricity by our counterparts in Europe and the US, it would be unjust to dismiss the Duke of Kent's role as merely providing an ornamental mouthpiece for the BCS.

In an otherwise innocuous prepared speech, written in such a way as to offend nobody, one thing which stood out was the Duke of Kent's reference to the "power and influence which this new technology was destined to ac-

The BCS looks set to make a bid for power and influence. Should its members decide to go ahead and petition for a Royal Charter, the Duke of Kent will prove an invaluable

Accountants have secured for themselves the force of law for qualifications to enter their profession, and the same will apply to engineers if the Finniston proposals are adopted.

The growing power and influence of computing means that certain safeguards are needed. That includes professional vetting of people working in sensitive areas such as data protection, where no single professional body holds sway at the moment.

If the BCS moves decisively now to exploit these issues, it could become a force to be reckoned with in the industry rather than just another learned society or a club of like-

Telecom sell-off

BACK BENCH Conservative MPs are said to be rubbing their hands in anticipation of the effect which the sale of 51% of British Telecom will have on the nation's profit-andloss account. So eager are they to get BT into private investors' hands that they are urging Industry Secretary Patrick Jenkin not to wait until after the next General Election, but to issue the sbares as soon as possible.

When the government announced its plans to sell the shares it said it would introduce the enabling legislation straightsway - but wait until after the election before putting BT on the market. That was the nearest it could come to putting the sale to a national referendum.

But now it is thinking about the unthinkable. For despite the government's original assurance, the Department of Industry refuses to deny the possibility that the ahares will be sold before the election.

If this were to happen investors would be taking a tremendous gamble with their money. For if the Labour Party won it would be under pressure from the unions to renationalise BT. And City experts say this prospect could cut the price of those BT shares by 25%.

The BT share issue will be the biggest thing to have hit the Stock Exchange for many years. It will take many months to organise, and even if the legislation is ready by July 1983, as expected, it could still be 1984 - the latest possibility for an election year - before the shares are

The Labour Party has announced its intention to make the sell-off of BT an election issue. Whichever side of the fence one sits on, the issue is important enough to be put before the voters, even if only as part of the government's overall policy. An under-sold pre-election sale would leave less money for the astional purse, and demoralise BT.

1984 and all that . . .

THIS week's example of the strange things people say about computers was sent in by Ghassan Kubba of London; who wins non-profit making organisations would be charged £107 per boundary, commercial users £150 and other bureaux £225.

This should in fact have read

Only extroverts can spend valuable time on a computer, and at Brunel students are actively discouraged from using the computer too often as part of their course.

Manager, marketing unit SIA Computer Services, London SWI.

Exports to South Africa Computer disasters

I SEE Computer Weckly (October 7) through its correspondents Linda Rout and Bridgette Lawreoce has seen fit to join the leftwing mob in howling against computer exports to South Africa, totally avoiding the wider issues, which directly involve the safety of all of us living in the West.

South Africa is the only really

stable economy in Africa. It offers also the only hope of a base against Russian and Communist ambitions n both south and mid-Africa.

Consider what would simost certainly happen if the South African republic failed to exist in

some excuse or other?

If you don't thick this would happen, take a look at Zimbabwe. How long has that country got before internecuse warfare wipes out its economy and Its stability?

I personally am sick to death of this Communist-inspired clap-trap about South Africs, which would more suitably printed in an -Nazi league rag.

after the other.

The evidence is that Sholes started with an alphabetical order keyboard and that a few keys were

Bureaux

tortunes

AFTER reading the article by Bo

ris Sedacca on results for the UK

September 23), I must disagree

with the statement that the

"bureau market figures also show

a decline in the straight computer processing operations' and as such

bureaux are less buoyant than the

ndnstry as a whole". Heseltine Business Services has

found, through experience, that in this recession there is an increase

in the amount of straight computer

processing, especially when the price for such processing can be held at a very low level. I can only

imagine that this statement refers

to the older bureaux who because

of their high costs are attracting

Truth about typewriters

IN YOUR article on the Maltron in the type basket were used one keyboard (CW, September 9) you perpetuate the myth that "the typewriter keyboard was designed to slow typists down to avoid early

rearranged so that keys which occur frequently next to each other (as in T and H) came up from opposite sides of the basket in order to make them less likely to There is no evidence that the qwerty keyboard was designed to slow people down. But it was designed to stop the typewriter keys jamming Sboles' typewriter had a circular type basket in which the keys struck inwards from around jam. This has nothing to do with slowing down the typist nor with trying to speed the typist up. It the type basket to hit the un-derside of the platen. The keys bad merely beloed to solve bis a tendency to jam, particularly when two keys close to each other

Burroughs' profits

REFER to the headline "King of Burroughs gets great results' (CW, September 9).

As a totally unbiased outsider, how in the name of accurate journalism can you attribute 12 months' profit to s new managing director of one month's standing. Plesse give credit to his predecessor who would you believe took early retirement at the age of 561

Managing director Trident Computer Services,

Editor's note. The first line of the news story stotes: "Burroughs UK lott week provided some good news for its new monoging director." Nowhere were the results attributed to Mr King.

Telephone

YOUR report on IBM's Audio Distribution System headed "IBM's voice message add-on reaches Europe" (CW, September 23) is incorrect in stating that "the system will also be limited to com-

munications between telephones

attached to a single exchange or

from almost any telephone any-

where in the world. As well as

phones, ordinary rotary tele-

phones, to which a low-cost porta-ble tone generating device is attached, can also be used. The

example, can therefore use ADS

M. D. STOTT

from a public telephone box.

SIA charges

YOUR report "Census data up-for sale" (CW, September 2) states that digitised boundary data is available from SIA Computer Ser-

However, the article states tha

ELAINE PRIESTLEY

£1.07, £1.50 and £2.25.

In fact, messages can be sent

messages

network of exchanges'

N. W. HALL Heacitine Business Servicea, Barking, Esaex.

comments (CW, September 30) on John Kavanagh's article (CW, August 26) go unremarked. As Follett states, a computer "disaster" every 30 minutes in the UK would be over 17,500 per annum. If this figure did not include "normal" hardware failures (and I feel sorry for Follett if hardware failures at his installation are the norm), the computer manufactur-

profits, selling replacement Follett goes on to state that for "normal hardware failures . . standby facilities are irrelevant" would suggest that this statement

ers would be making enormous

demonstrates that he has not grasped G. Hitchcock's second ing point. Titchcock was not only promot-

ing his company's services, he was also promoting the concept of con-tingency planning — for oll con-

disaster planning is not deter-mined solely by the possibility of fire, flood or terrorist attack, it is a function of the need for the computer to continue in service. Installations may have commendably low MTBFs and MTTRs, but in context of disaster planning these have little significance when the Maximum Time to Recover (Max TTR) exceeds that period during which the organisation can continue in normal operation (th

critical period).

It has been observed that this period averages 4.7 dsys, although certain types of organisations quote figures of two days or less, a number of processes have critical periods measured in

To illustrate this point about Msx TTR, let us briefly examine a 1. Computer downtime ex-

eeded one week while waiting 2. Failure of a data communica-

tions line esused chaos in an airline reservation system. The total downtime was not excessive by MTTR figures, but exceeded the critical periods. 3. Loss of vital data following a

system failure compounded black of adequate back-up cause prepared for any eventuality. loss of service for over three days; 4. A nsuch-heralded product launch was delayed by a computer failure. This caused loss of com-

pany prestige and threatened potential sales;

5. A bug in the operation system caused total downtime exceeding seven days in a 14-day period; this bug was only discovered after two years' live running, and was initi

ally diagnosed as a hardware fault.

Each of the above would be termed a "normal" failure. The effects may appear a little extreme until ooe examines the relationship between Max TTR and critical period. In each case the Max TTR exceeded either the industry-aver-

In only one case above did the organisation have a contingency plan. Unfortunately the plan did cover the event concerned

The effects of the loss of service from an organisation's computer(s) can he considerable. However they can be substantially reduced by planning ahead for the disaster that will come, in one form or another one day. This, I believe, is the point that Kavanagh was mak-ing in his article, and is that to which Follett takes exception.

A. M. W. BACON

Atkins Planning,

Hardware failures

IN REPLY to the letter from I. D. Follest (CW September 30) I suggest he asks a company such as a major bank whether or not they would consider a six hour "normal" hardware failure irrelevant.

As the research quoted in John Kavanagh's article proves, consequential losses depend on the nature of the business but can be very serious where online systems

are nivolved. We at UCS L consider anything that halts computing, whether icinporsry or permanent to be a saster. We have no need to einphssise the dangera — they exist and every responsible DP manager is only too well aware of them. Our only concern is to provide a service these people who are farsighted enough to want to be

S. S. HITCHCOCK Salea and marketing manager Unilever Computer Services

Attend one of our conferences and you'll

The manager of Systems Planning and

Development for Ford, Australia was a sceptic.

Now he's a convinced user installing LINC in

Australia and the Asian Pacific. He's just one of

To be sure of a place, clip the coupon and

the speakers at the conferences.

Where to hear the hard facts about writing your own software.

LINC is Burroughs revolutionary, new systems generator.

It lets you produce your own applications, in your own language, tailor-made for your own line of work.

What's more, it does it all in a fraction of the time normally taken to create such a system using conventional methods.

But that isn't even half the story.

send it to us as soon as possible. London; Monday 1st November 1982, 2.00 p.m. - 5.00 p.m. Tuesday 2rd November 1982, 10.00 a.m. - 1.00 p.m. at the May Pair Theatre, Stratton Street, London WIA 2AN.

Manchester: Wednesday 3rd November 1982, 10.30 a.m.-1.30 p.m. at the National Computing Centre Ltd., Oxford Road, Manchester Mt 7ED.

Burroughs

To Alan Payne, Burroughs Machines Ltd, Heathrow House, Bath Road, Hounslow, Middlesex. Telephone: 01-750 1400. Please send me_____ticken for the Burroughs Linc Management Conference for 1st November (London) \(\subseteq \) 2nd November (London) \(\subseteq \) 3rd November (Manchester) \(\subseteq \)

医多种性结合物 建二磷矿

FROM COMPUTER WEEKLY OF OCTOBBR 19, 1972: Trading in IBM abares on the New York Stock Exchange was suspended for several hours when n submission by the US Justice Department in its long-standing antitrust suit ngainst 1BM brought a settlement nesser. Irwin Rector was named as managing director of Burroughs Machines

a kneeling position ERGONOMICS Humbug. reasons are incapable of reaching operator comfort? Who cares? reasons are incapable of reaching normal sized tape decks.

with a token of its esteem.

A birthday cake, offically des-cribed as "giant," has been de-livered of No. 10 for the coosumption of the Leaderene.

Liveware

Don

right, it certainly looks as if Wang M And, It transpires that Wang is gie Thatcher for help in getting the go-ahead for its new factory in Stirling that it has presented her

I CAN'T WORK IT OUT

TRY THE CHIEF OP!

AFTER matrix management his firm in the summer was not comes a new term for everyone filling him in on everything that

Despite his wealth of experience

in the computer industry, Hos-kyns had little influence on gov-ernment information technology

nomic policy in his belief that the

disciplines of high technology can

SORRY, BEYOND ME -TRY THE CHIEF PROGRAMMER! IT'S REALLY A JOB

FOR A SYSTEMS

ANALYST!

CAN NO ONE RE-SET MY DIGITAL WATCH

lems. He belongs to the hard-line right wing school that teaches the

Let us run the country effecti-

kyns quitting his No I0 post is the feeling that he has no more contribution to make. Certainly his

The games

teaches Its pupils in the

curriculum of the marketplace.

WHEN SUMMER TIME ENDS!

joice in titles such as Death Blast

games on offer from Commodore. Another Vic in the Wall (Groan). "How about Vicgammon then?"
"Doesn't sound Kosher to me."

> It appears that the problem is in the Scandinavians' inability in the Scandinavians making recruit sonar operstors, than any mechanical failer, than any mechanical failer, than any mechanical failer, than any mechanical failer, than sookesman for the Swedies has claims that young people a beautiful to the standard of the standard open than the standard open the standard open than the standard open than the standard open the standard open than the standard open than the standard open the standard open than the standard open than the standard open the standard open than the standard open than the standard open the standard open than the standard open than the standard open the standard open than the standard open than the standard open the standard open than the standard open the sta





Deafening

sophisticated electronic things bobs which are supposed to an are supposed to the body state of the bo out the baddies.

The Swedes have carried on a

That wonderful world of Disney inside a computer

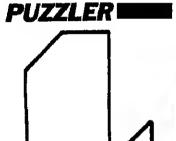
THIS year's Walt Disney Christmas movie, Tron, looks set to be the biggest money-spinner to have come from the studios famous for the computer.

This year's Walt Disney Christmas movie, Tron, looks set to be the approached Disney in 1980 with the idea for Tmn, and the single the computer.

Both objects and backgrounds innovation since 1928, when Mickey Mouse made hia debut. The film breaks new ground for Disney in dealing with subjects such as totalitarianism and revolu-

tion — inside a computer.

Tron opens in the West End today (October 21) and goes on general release on December 9. In the eight weeks following its US release, the film grossed more than ideas since 1977, and says the film \$30 million, and a video game inunched to coincide with the movie has already replaced Pac-Man as the most popular in the Star Wars have made impressive



IN this week's dissection problem you are saked to cut this shape into just two pieces that will fit together again to make up a perfect square (oeither piece is to be turoed over). See page 53 for solution.

studio gave him the money to produce a demonstration to prove that the sophisticated effects demanded could be achieved.

"We were interested in creating couldn't exist in the physical world. That's something computer-generated images can do very well," says Liaberger. He had been developing his

in Tron are computer-generated, and the actors play out their roles in both the real world and inside the large mainframe of a commuobjects and environments that nications company named Encom, where the supervisor program, MCP, has developed ideas above its station and set up a dictatorablp under which the applications programs are forbidden to communicate with their users.

Two principal, companies are responsible for the computer imag-ing in Tron, California-based Information torernational Ioc country.

The writer and director of Tron is Steven Lisberger, best known

> shape.
>
> Each pixel oo the computer's screen is assigned a colour and intensity to create the illusion of a solid, three-dimensional object.
> Multiplying the oumber of pixels
> per frame of film — more than two
> million — by the 24 frames per
> second st which the film travels, means that for each second or screeo time, almost 100 million blts of information are required.

The pre-production phase, where the basic computer images



The hero - a video game expert caught up in on electronic world where the

different techniques to achieve the images for the film. Triple-t digitised the designer's blueprints by tracing round the three elevations

The computer is then able to construct a wire-frame structure of the subject which can be maniputhe subject which can be manipulated in space. The MAGI technique differs in that it utilises a library of 50 geometric shapes which can be fitted together either additively or subtractively. These building blocks can then be assembled to construct the designed bled to construct the desired

By using computer imaging, rather than relying on hand-drawn pictures, Tron was produced in three years, as opposed to the seven that Lisberger estimates would have been required had the film been animated using cooven-

raise the **Mary Rose** LIFTING the Mary Rose from the bed of the Solent called for preci-

sion control. Hardly surprising, then, that a computer was involved io the business - a Digital Equipment 1 I/23 mainframe armed with real time software written by GCS

The secret of the software, exlains project manager Neil tarsmore, is the combination of modelling based on westber forecasts and tidal predictions, with real time measurements from which statistical tables are produced to help operators with the

The big problem in the salvage was apparently peak loading caused by a sudden lurch of the floating derrick, the Tog Mor, while lifting the Mary Rose.

This can cause a real weight of 600 tons to give a pull of 800 tons. explains Starsmore.



The whole operation can be jeopardised by the arrival of waves propagated from a storm cealer thousands of miles away, which is never expected to reach the area This is difficult to predict, but can be catered for in the model.

The motion of the vessel under giveo cooditions of wave motion, wind and load on the crane can be modelled for periods of 20 min utes, one hour and up to six hours ahead, savs Starsmore.

This is vital in a salvage operation that can last for several hours.

The Mary Rose was hanging from the crane tip several hours. during which operators of the equipment were constantly being updated on expected ship move ments by the computer aystem.

The independent auditor

SOMETIMES PRIGGED TO WORK

Another area of coocern is the

the computer system.

The independent status of the

systems auditor preveots soy

direct contribution to the systems

and corruption of data.

were created, took two years, the

live action using the real human

actors a mere two months, and

film was constructed, a further I0

Some of the characters in the

film are based on the real-life pro-grammers who were involved in

"The actors were introduced to

the programmers at an early stage in production," saya Lisberger. "It was a valuable insight into both the work of the technicians and to

the type of person who becomes a

This is borne out by the human heroes of the film. They certainly

act, speak, and tell the same jokes as the majority of programmers of

Despite the excellent quality of the computer imaging in Tron, Lisberger doeso't believe that the human actor is lo any danger of becoming yet another victim of the

"Computers will replace coo-ventional model shots without a doubt," he says, "But until a digi-

tal printer (in the film sense)

the ultimate special effect."

e feasible. Actors are what I call

■ Sae pages 18/19 for a special

feature on computers in the cinema industry.

the computer imaging process.

Software Engineering PROGRAMME **COURSE PROGRAMME - AUTUMN 1982**

MVS System Menagement

Getting Started in Capecity Management 2 - 5 Nov Munich Software Physics and Capacity Management 15 - 19 Nov Mllan 22 - 28 Nov Munich Stendard Costing for Cepacity Management 15 - 19 Nov London Equipment Planning and Configuration Design 4 - 8 Oct London The Hague 15 - 19 Nov Predicting Throughput, Response Time and 18 - 22 Oct Rome 8 - 12 Nov London Utilisation 29 Nov - 1 Dec London Capacity Management Workshop Frankfurt Introduction to IMS Performence Menagement 1 - 5 Nov London 13 - 17 Dec The Hague Introduction to Capacity Planning end 18 - 19 Oct Munich Modelling

LISBERGER . . . "Computers will never replace octors."

The Institute for Softwere Engineering is an internetional organization serving members worldwide. ISE helps D.P. management develop a wide range of software engineering skills which can be used to establish and implement effective dete centre working procedures.

7 - 8 Dec

London

For course registretions or further information, please contect: INSTITUTE FOR SOFTWARE ENGINEERING PO Box 89, Reeding, RG1 4JD, England Telephone: (0734) 586408

Les King continues his series on changing job sunctions and titles. ADEO SHOD COMPUTER systems audit and user training have one thing in

Despite almost universal agree-ment as to the value of these funcions, very few organisations actu-

ally employ anybody to carry them It seems to me that when most computer systems go live, users are giveo a pile of documeotation with the instruction to "Get on with it mate", and any on-going review of systems effectiveness is done purely by response to com-

Surprisingly, it is the supposedly bureaucratic organisaions, such as major banks and will ensure that proper controls. public authorities, that seem to such as batch totals and record and use of formal "quality assur-

Io such organizations, the cootrol of access to information concept of continuous financial audiung is well-established and computer audit, which uses similar techniques, is frequently a spin-off the computer system. activity uodertaken by accountants with computer knowledge rather than by full-time DP profes-

design, a major problem for any-body with a tendency to wade in and "show how it should be The esscotial task of the computer systems auditor is to provide an ependent assessment of compu-Once a system has been de-veloped, the systems auditor will become involved in acceptance ter systems usage making appropriate recommendations for im-provement in control, efficiency

testiog with a view to making sure The job embraces all aspects of uter systems usage, including technical resources, and not just the monitoring of financial areas as would tend to be the case with

that the system produces results in accordance with the agreed user specification. As with systems desigo, the au-

In the early atages of systems Andrew Thomas.

ditor will not acutally start produ-ing his own test dats at this stage, but will instead satisfy himself that valid and comprehensive testing has been carried out.

It should be pointed out that the

systems auditor does not make a comprehensive study of cettly single system but, as with financial auditing, tends to work on a "sampling" basis undertaking more distalled investigation of critical applications on the property of the systems of critical applications on the systems of critical applications of critical applications on the systems of critical applications of critical applica PAYROL PROGRAM RESULTS £5.00 plications or where sampling SYSTEMS ...

techniques indicate problem ares.
When systems are live, they are monitored on an on-going basis with the auditor tracing sample transactions using software tools, auch as NCC Filetab, to examine detections than relying on data directly rather than relying on output which could well have been development, the systems auditor "frigged" to give the appearance of

Another technique for detecting unauthorised changes is to damp! few object programs and compare them with current versions a fee months later although this usually highlights aloppy documentation rather then fraud

Physical security is also a major area of interest to the systems and tor who will require appropriate contingeocy plans, for backup and recovery, to guard against a major disaster auch as a fire of

The monitoring of efficients The monitoring of elicibetic largely a matter of making such that systems work without causes that systems work without causes undue user bottlenecks, although the auditor may well investigate the auditor may well investigate. the use of technical resources the as data preparation or the period ance of operating systems...

conventional, non-computer audit- Workplace is compiled by Philip Hunter and

MICRO MARKET

France gears up for 200,000 micros by end of the year

reliable technology.

Enthusiasm is the only way to succeed in the fast changing microcomputer market, as Jack Gee discovers

Io order to monitor users' re-

The retail price of the Micral in

ourselves as very different from

explains our auccess on the inter-

national market and particularly is

come our partners."

Collet complained that French

the government's appeal to us to conquer new markets."

range is composed of two families, the Series 80 and the Series 2. The

single position Micral 80/21 has a

screen with 1,920 charactera, a 64

Kbytes memory and a twio unit of floppy dlacs of 140, 256 or 600 Kbytes.

A 600 Kbytes floppy disc unit can be replaced by a fixed 51/4-inch minidisc with five million or 10 million characters.

The single position Micral 80/22 was developed for the French Ministry of Education. It has a

microcomputer for the mass mar-

The Micral microcomputer

"We behave differently. This

the well-known multinationals.

BY the end of this year 200,000 microcomputers will be in use in France, according to market specialists. Sales of 70,000 units many potential customers who heare forecast for 1982, and the situte to buy because they are not figure is expected to double in 1983. convinced that data processing is a

actions and solve their problems as that It will faunch its long awaited TO 7 micro this autumn in partnership with Nathan, the publishing firm. Matra has promised to present a rival product in alliance with Hachette, France's bigthey arise, the first of the new Mi-crals are being installed in the Paris area. Salea will be extended to most of France by the end of

gest publisher.

They will be in competition with
CII-Honeywell Bull, which like France ranges from FFr24,125 excluding tax (£2,045) for the 2 x 300K Model B to FFr26,150 Thomson is now under State control, and Goupil, a privately-owned company. CII-Honeywell Bull and Goupil are making big inroads into the fast developing (£2,215) for the 2 x 700 K Mode C. These prices include CP/M soft ware and the Basic programming language.
Collet said: "At R2E we regard French market for microcomput-

French industry and distributors use the retail price of FFr50,000 (£14,000) for a central unit as a yardstick to define a countries which are only just en-tering the industrial era."

He added: "Our role is to s5,000 in the US.

The Micral, the first domeslically produced microcomputer supply the necessary tools to big on the French market, is the result and small firms. Instead of seeking of a decade of research and innova-tion by R2E, a CII-Hooeywell Bull subsidiary. The parent company the brand name Questar/M

Launching the group's latest manufacturers of microcomputers model, the MCI which is based on its well proven Micral 80 series nation in the country's Customs natioo in the country's Customs duties. While a French importer of microcomputers pays only 8% import duty, a French manufacturers of microcomputers who will really matter by 1986."

natioo in the country's Customs duties. While a French importer of microcomputers pays only 8% import duty, a French manufacturer pays 18.6% duty on the basic electronic components. He pointed out: "This bonus for foreign equipment is contrary to the government's appeal to us to

This is a market where everything moyes at breathtaking speed. I understand why the public cannot keep up with the rapid rate of change

The MC1 offers 64 Kbytes of memory and is based on the Z80 microprocessor. It is equipped with a screen and printer linked via V24 and RS232C interfaces. The 12-inch screen has a 1.920 was developed for memory and a special keyboard for use with a simulated training language.

The Micral 80/31, also a single The 12-inch screen has a 1,920 character display (24 x 80). The computer has two integrated 514-inch floppy discs with direct memory access and soft sectoring. Capacitics of 2 x 300 Kbytes and 2 x 700 Khytes can be chosen.

Collet sald: "We were impressed by the way almost all users were The Micral 80/3 I, also a single position model, has a 64 Kbytes memory and a double floppy disc unit of 140, 256 or 600 Kbytes. The 600 Kbytes unit can be changed for a fixed 514-inch floppy disc unit with five million characters.

The Micral 80/3 I, also a single position model, has a 64 Kbytes memory and a double floppy disc unit of 140, 256 or 600 Kbytes. The 600 Kbytes unit can be character.

The Micral 80/3 I, also a single position model, has a 64 Kbytes memory and a double floppy disc unit of 140, 256 or 600 Kbytes.

The Micral 80/3 I, also a single position model, has a 64 Kbytes memory and a double floppy disc unit of 140, 256 or 600 Kbytes.

The Micral 80/3 I, also a single position model, has a 64 Kbytes memory and a double floppy disc unit of 140, 256 or 600 Kbytes.

The Micral 80/3 I, also a single position model, has a 64 Kbytes memory and a double floppy disc unit of 140, 256 or 600 Kbytes.

The Micral 80/3 I, also a single position model, has a 64 Kbytes memory and a double floppy disc unit of 140, 256 or 600 Kbytes.

The Micral 80/3 I, also a single position model, has a 64 Kbytes memory and a double floppy disc unit of 140, 256 or 600 Kbytes.

The Micral 80/3 I, also a single position model, has a 64 Kbytes memory and a double floppy disc unit of 140, 256 or 600 Kbytes.

The Micral 80/3 I, also a single position model, has a 64 Kbytes memory and a double floppy disc unit of 140, 256 or 600 Kbytes.

The Micral 80/3 I, also a single position model, has a 64 Kbytes memory and a double floppy disc unit of 140, 256 or 600 Kbytes.

insisting on a wide-ranging library of software st reasonable prices. So The Micral 80/55 is a multipo tion microcomputer with a Z80 8-bit processor and a 64 Kbyte: we adspeted the most frequently used operating system, Digital Receaser CP/M. This system chabled us to adapt the maker's

chabled us to adapt the maker's big range of software to the French language.

"But, in order to increase the Micsal's potential we have microcomputer language by the branched in France by Société de "But, in order to increase the Microil specific to from Goupil, the brand name of a successful microcomputer launched in France by Société de Microinformatique et de Télécommunications (SMT). This firm was set up in 1979 as a partnership between the specific speci

ket at a competitive price. The Goupil 2, at FFr7,000 (£560) for the basic model, offers the operating systems DOS FLEX, UCSD and CP/M, and can be equipped and the price of the control o and videotex facilities.

Goupil microcomputers are

Georges Zimeray, president of Sonotec, one of France'a biggest microcomputer distributors, said:

offered with Basic, Fortran, Assembler, Pascal and Forth as well as with a wide range of software and a Voltaire word processing

thing moves at breathtaking speed. I understand why the public can-not keep up with the rapid rate of change. Firms like mine have a duty to give people quick and straightforward answers to their questions about data processing

Sonotec made a big contribution Apple's success in France, sere the US microcomputer's ales have risen from 300 in 1979 to 7,000 last year.

To obtain exclusive sales rights Zimeray's stores Apple pro-

Paris has been chosen for user trials of the new Micral micro, marketed by R2E and CII-Honeywell Bull posed a merger with Sonotec. But Zimeray insisted on staying inde-pendent: "I had my own ideas about the responsibilities of tainly oot damaged Sonotec's pros perity. Its turriover rose from I0 million francs in 1978 to almost 100 million francs last year. Zime-French firms. So I turned down ray looks forward to an eveo better this attractive offer, brake with performance in 1982. Apple and broadened the range of

microcomputers which I was

offering to my customers," he ex-plained. "In this way I can enjoy

freedom of pressure from the manufacturers, and give the public

a wide choice of hardware and soft-

ware to meet their individual re-

The break with Apple has cer-

Confident in the development of France's microcomputer industry and of the appetite of the consumer market, Zimeray added: You have to be passionately keen discovered when I first went to Japan. Enthusiasm is the only way to succeed. There is no other

NEW SICK PAY LAWS — THE ANSWERS

Fully-tested, top-value, one-day conferences

From Wednesday April 6th, 1983, avery employer will be obliged to undertake financial and administrative burdens in respect of every significant instance of emplovee absence.

The complex rules will require informed ossessmants from: Chief Executives, other Senior Administrators, Internal Accountants und External Auditors, and Computer Advisors and Bureaux as woll as personnel and tR exacutives.

Incorrect decisions on such matters as qualifying doys could cost lorge organisations hundreds of thousands of pounds. Internal sick pay schemes may have to be "toppad up" considerably.

In short, from April 1983, systams and records for nutification, exclusion, withholding, transfer, sickness absence control, entitlement culculations, daily offsetting calculations, payments and recovery will all be subject to inspection and oudit. Criminal penaltiss can result from failure. Expensive empluyee appeals will result from inadaquacica

WHAT THE CONFERENCES ACHIEVE

Davised and developed by IRB over Iwo years, these courses not only explain the SSP lew but provide practical solutions to the real problems - how to operate SSP hand in hond with company aick pay schemes and how to develop sickness arrangements that meet statutory alandords while providing optimum financial, management and employee-relations benefits.

No other organisation has done the work required to identify the problems and find the variety of practical solutions ellowed. Hundrads of employers have saved weoks or months of work by ettandanca at these IRB courses. Thousands more will be nefit from these IRB coursea before the and of tha year.

WHERE AND WHEN

or Dscsmber 10 LONDON November 19, or Decamber 8 MANCHESTER Novembar 16; or Dacember 16 GLASGOW Novamber 15: or December 9 BIRMINGHAM Novembar 17;

. COST

A alngls placs costs £115 + VAT Multipla-placa retas, exclusiva of VAT ars:-£105 (2-4 pleces); £95 (5-9 places); £85 (10+ places).

HOW TO BOOK

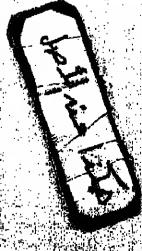
You cen book by Mall, Talax or Phone

just identify the required number of places for your salected dates and venues and provide the delegates' names and job titles for aech fixture.

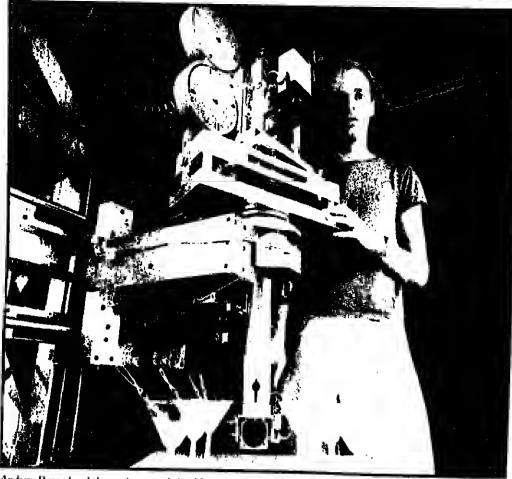
Book through IRB, Silverton, Exeler, Devon, EX5 4HZ Telex 42518 SSP

Phone 0392 860991,..

giving your organisation's title and oddress and the name of the executive making the booking and identifying the number of places and venues.



COMPUTER GRAPHICS



The motion control rig is used for a wide range of special effects which might otherwise be impossible.

Andrew Berend and the motion control rig with snorhel lens for low-level shooting attached.

world in creative innovation and technical proficiency. During the

last few years, however, this posi-tion has been sadly eroded.

Now the Moving Picture Com-pany, a British film and videotape production company, has set up a special effects unit to cope with the huge increase in demand from people making commercials, pro-

gramme title sequences and special effects feature films. This increase parallels the growth in the US.

Kim Relick, MPC's special effects producer, says: "About two years ago MPC decided to dive in at the deep and and are less than the deep and and the less than the deep and and the less than the deep are less than at the deep end and develop the new technology required for sophisticated film and video special effects despite the loog lead down. In 1950 the first computer was and substantial forward distant distant distantial forward distantial f special effects despite the loog lead time and aubstantial inveatment required. The general approach was to 'shoot on film and

post-produce on videotape'."

A odrew Berend and Bill Mather, the unit's designer/directors, both have film backgrounds and agree that people still prefer the look of film to the look of tape so shooting on film was an essential prerequisite. Tape, however, with all its increases are somble. with all its instantaneous sophis-ticated effects, seemed the right ehoice for post-production work. This is wheo the "rushes" are put together to make a finished pro-

First Berend spent several months in the US studying all the production techniques and viaiting all the major special effects companies. He concluded that MPC should put together and develop computer graphics and motion eontrol, and simultaneously build on MPC's well established digital

The British film and television industry has been criticised in the Press receotly for not investing in the new technologies available in the US. Traditionally British the US. Traditionally British technologies and studies have led the to very special effect

With the success of films like Star Wars, special effects are in big demand, and computers play a vital role in new approaches to graphics on the screen

ter imaging, is the front runner in linking man and computer in crea-

driven display, attached to a com-

Computer animation was ideally suited to the stylised demonstration of new products both simple and complex. Thus the product became the hero

of the commercial

sachusetts Institute of Technology, was used to generate simple pictures.

puter named Whirlwind-I at Mas-

velopment stage, to see how they would look without the need to build costly models. Massive funds were applied to make computers accept 3-D images and move them around, even fly them through the air or drive them dowo a computer

Then, In the late Seventies, 3-D computer animation received a huge boost from a relatively unexpected quarter. Steeply rising film production costs bad already caused the major US advertising ageocies to move into the field of reduction costs. videotape, first for post production and then more and more as the originating medium for their TV commercials.

At the same time the rapid development of video technology had introduced advertising agencies and their clients to the possibilities of high technology wheo applied to the film-making process. Among the innovations were computer controlled editing suites, digital effects generators for instant special effects, and chromakey for iostant matteing - a sophisticated technique whereby different

advertising agencies looked around for ways of making TV commer-cials without people — and they looked to technology for the ana-

As a result they stumbled into the world of 3-D computer anima-tion. For them it seemed a tech-nique sent from heaven. It could be used to give their commercials a

be used to give their commercials a prestigious "hi-tech" look that reflected favourably on the product.

And, just as General Motors and Lockheed had discovered many years before, computer animation was ideally suited to the atylised demonstration of personner. demonstration of new products — both simple and complex. Thus the product alone could become the hero of the commercial and, of course, the product did not ask for

repeat fees.
Soon 3-D animation commercials were aweeping the awards in the US, and production companies which had depended for their survival on ocassional special effects sequeoces for science-fiction epics were working 24 bours a day, seven days a week.

seven days a week. When the Moving Picture Comon MPC's well established digital and electronic effects capability.

Computer graphics, alsu known as computer animathun or computer of their products at the description of the US Equation of the US Equation of their products at the description of the US Equation of the US Equation of their products at the description of the US Equation of the US Equation of the US Equation of their products at the description of the US Equation of their products at the description of their products at the description of the US Equation of the US Equation of their products at the description of the US Equation of the US Equation of their products at the description of the US Equation of the US Equation of the US Equation of their products at the description of the US Equation of the US

genuinely "user-friendly" — a term MPC's designers had previously heard applied to several ystems that seemed about as

friendly as a mad dog.

MPC bought the basic software in the US from a well-established production company, amending and developing it in London to meet ita particular needs. That left only the problem of out-

duction of motion control when should more correctly be called putting.
The solution combined computer technology with the latest techniques in fibre optica -35mm film via a computer-

The computerised control of its motion of film cameras, The cameras, film projectors and

Turn to page !

tion is considerable.

Using several layers or cells of an Imation, each separately coloured and drawn object can be made to travel through 3-D computer generated environment. Match-mixing computer animition to live action is a well-sublished technique, enabling 3-Dejects to turn into the real object.

they represent and vice-vers. By using the extensive video specia

effects equipment of a company like MPC, the combination of in

action with computer anima

For example, with the his

key system, a real person can will

down the pavement of a compute

image city, get into a compan-generated car and drive and Linked to Ultimatte, or a digit

effects generator such as Quanto the creative potential of combining

computer animation and live s

Berend also advocated the into





COMPUTER GRAPHICS

Complex effects are the order of the day

From page 18

multiplicity of special effects techniques to achieve complex and dazzling special effects. Previously big motion cootrol rigs were avail-sble only in the US, and were used to achieve oearly all the sophis-ticated special effects sequences in the recent surge of special effects films such as Star Wars and Blade

The camera is put on a geared head similar to, but more flexible than, that used for live action shots. This is placed on a dolly which runs on tracks, again similar to but more flexible than those way for live serious. In the case of used for live action. In the case of MPC's rig, the rails are mounted on the ceiling and the dolly hangs from the rails.

The rig is controlled by a computer. The movements the director requires must be entered into the computer. Start in position A, move to position B over two seconds or 50 frames. Go on to osition C panning through 20 de-

> ✓ Work that would have taken months can now be achieved sometimes in hours 🗬

grees, move to position D and tilt

whole move for a shot has been

to put the camera in its first positioo. When the director hits the go been entered into and remembered by the computer.

Director/designer Bill Mather with the computer graphics system based on Hewlett-Packard hardware. button, the computer controlled rig and camera duplicatea exactly every move in normal running time.

If, as is usually the case, a film camera is being used (the right).

Digital and electronic objects are the third major element. MPC was the first company in the UK to introduce digital effects in the form of Quantel's DPE 5000; later camera is being used (the rig can be used for film or video) a video and rotate were added. Because camera is attached to the film cam- most of the shooting is done on era's viewfinder to enable everyone film it is first transferred to tape in

Although this sounds complicated, it isn't. The motions can be incomplicated, it isn't. The motions can be incompliar way to a erane driver driving a large crane on a building site.

First, the moves are "jockeyed through" alowly with various changes critical positions. Similar way to a erane driver driving a large crane on a suiding site.

First, the moves are "jockeyed through" alowly with various changes critical position and which is later reodered invisible by the changes critical position and states are discovered in the same of the image.

The computer simultaneously using the digital effects geogrators, and the moves are "jockeyed through" alowly with various controls a model is mounted on a stick, which is later reodered invisible by the change of the image.

The computer simultaneously using the digital effects geogrators, and the moves are "jockeyed through" alowed the manipulated using the digital effects geogrators, the change of the image.

The computer simultaneously using the digital effects geogrators, the change of the image.

The computer simultaneously using the digital effects geogrators, the change of the image.

computer memory. Wheo the is mounted on a dolly, the dolly is determined, the end result is that the computer has been mounted on rails on the ground.

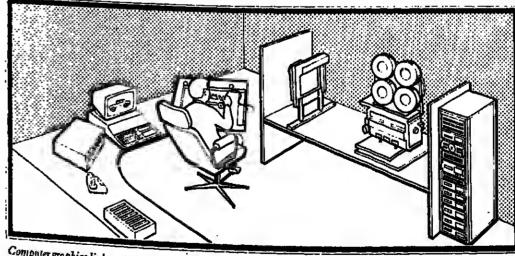
The model can therefore be made the computer has in its memory every move, pan, tilt and timing.

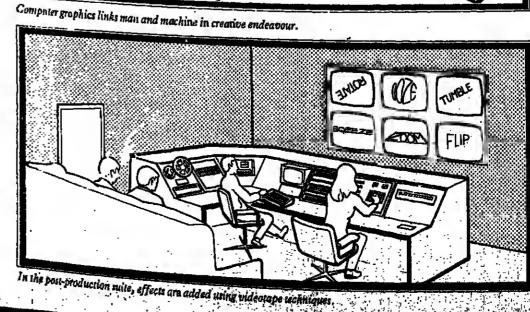
The computer is then instructed to put the computer is then instructed fashion after its movements have

succesa of science fiction films such as Star Wars. The Empire Strikes Back, Alien and Blade Runner has heightened interest in special effects generally. Io October Disney's feature film Tron opens in London. This includes 15 minutes of the most sophisticated computer graphies and special effects ever produced.

changes, critical positions being checked, and so oo. When the director is satisfied with each part of the more interesting to the director is satisfied with each part of the more interesting to the control of the more interesting to the changes of the more interesting to the changes of the more interesting to the changes of the chang of the move, it is entered into the on a geared head, the geared head ing traditional film matte work technique with the new electronic techniques, a combination of foregrounds and their separately ahot backgrounds can rapidly be achieved. Wurk that would have taken months can now be achieved

Relick explains: "The runaway





A laser disc got MPC on the move

THE FIRST big break for the Moving Picture Company's special effects unit came courtesy of Philips and the advertising agency J. Walter Thompson. Mike Gil-mour, JWT's head of television, bravely gave MPC its head to produce the demonstration disc for the Philips Laservision system.

One side of the demonstration disc is a six-minute programme showing the ease of operation and outstanding features of the player, other side is a four-minute sequence of an altogether different nature introducing the range of programmes and feature films available.

For this Philips wanted to have something exciting, innovative and completely original. Together with the ereative team from JWT, designer/director Bill Mather designed the most complex piece of special effects work yet underto-ken by MPC.

It incorporated almost every imaginable type of special effects technique. Most of the principal photography was shot on film in-cluding the computer imaging and ing done on videotape using up to six computer-controlled videotape recorders simultaneously

The opening shot is of a model city built to simulate a circuit board with silver strip roads and

the board is, of course, the Philips logo, and as the eamara tracks in to close up, the futuristic Philips ailver video disc spins away from

The disc levitates and a compu-

ter graphic of the player forms around it. The camera explores the player and follows the internal electronics of the device as a laser beam sears through the picture and hits the uoderside of the disc to demonstrate how the pictures are generated.

The production resulted in some major redesign of the equipment,

Although a test film for Nikor produced perhaps some of the most outstanding computer graphic images, the most interest-ing and challenging project to date was the Sensodyne toothbrush commercial which has been put on the air recently.

It starts with an image of a computer graphic toothbrush which transforms itself into the real thing. The real toothbrush then brushes computer-imaged teeth. Throughout the commercial, computer graphics, conventional animation recliniques and motion controlled live action are eleverly combined using a combination of film and videotape opticals.

news for computer products to the every computer products Middle East We've opened up the Gulf! Middle East Computing, means nothing For the very limit turne, commuter assess in the rich Gult States – and throughout the Arab world – have a regular journal reporting on the technology and services awitable So now you can talk direct und sell clirect - Lo potential customers throughout this vist. fast growing market. (A market £74,000,000 worth of computer How we've done it

Middle East Computing begen es a single issue publication, backing the Gulf Computer Exhibition end Conference et Oubel iset December: its enormous success revealed such en urgent and widespreed demand for computer product information that it is now published regularly.

6000 copies era being sent to established 6000 copies era being sent to established computer users or key personnel within government and major business orgenisations, in the Middle Eest countries predominant in the computer merket. The circulation was compiled through the full research resources of Computer Weakly and IPC Business Press backed by contacts meda at the Guif. Computer Exhibition.

Middle East the lieure of the from Preschill



The computer controls a model mover to create many different movements - spin and tilt, for example.



by Andrew Thomas THE 1982 European finals of Computastars, where the best 36 teams from Britain, Belgium and the Netherlands battled it out in the splended surroundings of the sel, north of Brussels, were dominated by British teams, and Kalamazoo in particular.

lloth the men's and women's team titles went to the Birming-hum-based company, but Bob Kinch of Legal & General pushed Kulamazoo's Jell Harrison into second place in the men's individual competition. The women's champion was also from Legal & General - Anne Bragg.

he sure of is that there will always moved into the overall lead after he a steeplechase in Compumstars two events. The individual win-- so organiser Gordon Cairns de-cided not to have onel A 1,500 Digital.



The day started with the shot putt. Susan Richardson of Digital GB beat Hasiena de Vries from CMC Holland, Elizabeth Porter from Barclays Bank UK, and Fanny Zevenhek of Centraal Beheer, into joint second place.

Kalamazoo women started well, and the Dutch made a good start, with the Digital men's team beat-ing Commercial Union UK. Legal & General's Bob Kinch shared the Rigsbergen of Digital NC.

icneral - Anne Bragg.

One thing that competitors can the team event from Barclays, who

lead with Marcel Rijsbergen of Digital NL, Kalamazoo I Number with Dutchman Piet Walraven of Swets en Zeitlinger tying for the basketball championahip. Kinch

finished second to hold on to the overall lead by the slender margin

Dutch team Arc Automation Services proved to be the best bes-ketballers, but their win only moved them into eighth place in holding on to their lead with

The Exhibition reaching people

building with microcomputers

MCROSYSIEMS'83

West Centre Hotel London SW6

February 23-25 1983

Microsystems is the major event for engineers,

designers and technicians using and building with

microcomputers.

if is a unique apportunity for you to demonstrate your product or services to the vital core of the microcomputer market — the senior designers and engineers who buy micros, peripherals and components to build into systems; who use them in

process control of product opplications; or who are active in research and design

engineering. There is no opportunity in the year like this one for identifying and

conloding your prime prospects.

Find out how exhibiting at Microsystems 183 can work for you by completing and refutning the coupon now to: The Exhibition Manager, Microsystems 183, IPC Exhibitions Ltd., Surrey House, I Throwley Way, Suffon, Surrey, SM1 400.

experience in the vaulta, the Bar-clays Bank women beat Legal & General ioto secood place, and pulled out a nine-point lead over

But the Kalamazoo men pro-vided consolation for the company by winning the oren's heat. After four events they had built up a commanding 22-point lead over Digital Holland. Rowntree Mack-

move up to 10th place overall. After the break came the 100 metres. Bob Kinch fulfilled the promise of his earlier performances and won the event ourright, knocking Kalamzoo's Jeff Harri-sion froot the No I spot.

But Harrison's team was not to be removed from the overall lead, and



systems house Rendeck, were suitably impressed by the standard

Rowntree Mackintosh 1.

ley Davis took the male trophies, and Legal & General and Anne

Meanwhile, the viaiting Inland

Revenue tug-of-war team, the

Worthing Rams, were the surprise

Ran	k Name	Reculte									
ī	Kalamazoo 1, GB	27	34	37	34	36	33	23	42	266	
2	Rowntree Mackintosb 1, GB	18	24	30	33	24	45	40	36	25	
3	Commercial Union, GB	29	22	36	20	34	33	24	45	24	
4	Legal & General, GB	26	23	33	26	34	36	32	30	24	
5	Barclays Cank, GB	23	24	27	26	33	39	28	24	22	
6	NPI, GO	27	29	16	24	38	2t	23	39	21	
7	Swets en Zeitlinger, NL	25	22	29	23	27	24	26	30	20	
8	CMC, GB	28	30	21	29	34	12	16	33	20	
9	Sheffield Insulating, GB	22	26	30	26	24	21	31	21	20	
10	Kalamazoo 2, GB	12	19	25	28	28	39	20	27	19	
11	Philips, NL	22	25	26	24	28	21	29	21	19	
12	Digital, NL	32	27	26	25	23	12	18	27	19	
13	Rowntree Mackiniosb 2, GB	21	25	23	22	18	36	23	18	13	
14	BSO Apeldourit, NL	22	10	37	25	24	27	23	18	11	
15	Barclays Int. GB	23	25	23	25	22	12	14	42	18	
16	ARC Automation Sys. NL	21	20	38	22	26	21	13	21	15	
17	Rendeck, NL	9	24	23	23	20	36	20	18	12	
8	Janssen Pharma, B	16	18	28	29	21	18	17	24	12	
19	Burroughs, NL	19	2υ	22	21	23	21	17	27	17	
20 21	Caterpiller, U	22	23	28	21	21	21	21	12	le	
21	Informatikum, NL	19	19	27	24	25	18	28	0	16	
22	Concolting Ass. NL	22	19	20	20	25	21	27	6	16	
23	ADP Benelox, NL	24	21	32	18	16	12	10	18	15	
24	Data General, NL	16	19	25	10	14	21	20		137	
25	Digital, B	- 11	5	26	14	18	15	14	12	112	
26	Control Data, B	12	11	15	17	19	6	10	18	K	

	Column Su(a) D				••	<u></u>	<u> </u>	<u></u>				
Ran	MEN'S INDI	MEN'S INDIVIDUAL RESULTS Name Resolic										
1	Bob Kinch (Legal & General)	12	12	12	9	13	12	12	10	92		
3 4 5 6	Jeff Harrison (Kalamazoo)	11	11	13	[1	8	11	13 12 12	14	85 82 78		
3	Mike Hawtree (Rown, Mac. 1)	5	ii	12	12	8	15	13	12	36		
4	Roel Ter Weel (Philips)	6	15	12	10	9	7	12	.7	16		
5	Dave Cross (NPI)	11	11	2	ų	11	.7	12	13	75		
5	Lesley Davis (Com. Union1	5	. 1	12	8	11	11	12	15	73		
7	David Cane (Barclays Bank)	5	11	10	8	10	13	9	8			
8	Malcolm Shottleworth	_			_				9	14		
•	(Kalamazoo 21	7	10	11	9	ĬΟ	13	5 10	10	7		
9 10	Pier Welraven (Swets)	-	7	13	8	10	ō	In	10			
w	Michael Milne			10		a	7	ŧO	7	6		
11	(Sheffield Insulating)	.5	11 12	10 10	11 10	ี 7	á	ŭ	ģ	6		
iż	Marcel Rijsbergen (Diglial) Sieve Viocy (CMC)	12	9	11	10	12	7 4 7 12	3 3 9 9	Ιĺ	6		
iŝ	Beo de Orce (Burroughs)	6 5 6	7	. 8	10	15	7	ő	' 9	6		
i4	Veteren Team (Rown. Mac)	ź	7	7	٠,	7	12	ģ	6	6		
İŚ	Pairick Vijverman	٠	•	'	•	•		•	_			
	(Caterpillar)	19	9	9	7	7	7	8	4	6		
16	Roeland Meulen (Jerssen)	4	á	13	10	Ż	6	5	8 6 6	35		
17	Rick Mcyerinck (ADP Ben.)	ġ	8	io	8	7	6	6	6	5		
18	Michael Box (Rendeck)	8	ž	7	6	7	12	9	6	5		
19	Houb Groodmag									5		
	(BSO Apeldoorn)	8	1	12	9	8	9	2	.6	55		
20	Hugh Nicholls (Barclavs Int.)	3	9	6	10	7	4	. 2	14	5		
21 22 23	Cees Westerlaken (Con. Asa.)	3 6 4 4 9	1	7	10	11	7	10	2	5		
22	Jan Van Doren (Arc Aur.)	4	7	10	6	10	7	3	1	5		
23	Veterao Team (Data General)	4	8	10	2	7	7	2	4	1		
24	Jack Wlingsarden (Influm.)	9	ı	7	5	10	6	8	- 4	4		
25	Paul Eysendeyk (Digitel B)	4	1	9	7	6	7 7 7 6 5 2	10 3 9 8 6 2	614274246	1		
26	Ewen Michael (Control Data)	3	5	5	2	6	2	2				

26 Ewen M	ichael (Control Data)	3	5	5	2	6			-6				
Rank	WOMEN'S	TE	TEAM RESULTS Results										
3 Barclays 4 Digital, 5 Gentraal 6 Digital, 7 Control	General, GB Bank, GB GB Beheer, NL NL Data, NL ontrol Data, B L	30 25 26 23 21 23 24 21 17	18 17 25 17 22 26 11 7 17	39 37 36 27 31 21 30 20 33 23	32 38 41 24 26 20 18 25 15	36 34 29 36 25 15 26 22 21 16	45 30 27 39 21 27 12 18 6 12	29 35 26 26 23 20 24 27 20 9	39 45 27 27 24 21 21 24 27 6	265 261 257 219 193 173 166 164			
WOMEN'S INDIVIDUAL RESULTS													

Ran	k WOMEN'S INI	IVI	•	Tot						
1	Anne Bragg (Leg & Gen) Susan Richardson	7	10	13	13	14	10	12	15	
	(Digital GB)	10	10	17	. 4	15	13	10	9	. 8
3	Alison Graot (Kalamazoo) Fanny Zevenhek	7	.3	13	ıi	iŏ	15]2	13	Y-1
•	(Central Beheer) Joke Dijkgraaf	. 9	g	П	12	g	7	8	8	
-	(Control Date N7)	•	4	12	o	12	4	10	.7.	
6	Elizabeth Porter (Regionse)		7	iõ	14	ğ.	. 9	8	. 9	
	Marien V Huerlenaghia	. 7	12	7	9	ž	9	12	7	
	(Control Data B)	8	4	2	12	·ġ	6	. 10	. 8	- 4
.9	PROBLEMS IN Velocification and a	. 9	i	15	4	7	. 2	. 8	. y	1
'n	Sebine Provost (Digital B) onts are, from left to right, sho	. 6	. [. 6	.3	7	. 4	- 3	- 15	



European finalists

Costrol Osta (NL): Joke Dilignate, Irene van er Kool-Meike, Els van Eden-Berhaveld, Betty Livy Goether, Mariles Dulgereije-Bouman. Ligal & Orseral Assumnce: Anne Brigge, Ve-lerie Edwards, Ann Fish, Susan Mason, Mandy

dinen (NL): Jack Wiltegrarden, Hena a, Rant van der Meiden, Rob Zaal, Ojsh ne. caeral (NL): Danny Franchinan, Martin a', Nko Biom, Frad Mais, Wim Smitteneres Machintoch I (OB): Miles Haweres, Andreit, Andy Johnson, Tony Press, Andy Associates (NL): Cees Westerlaken, acc Albers, Frans van Sectors*, Jac-Rowster Mackintonk ? (GB): Martyn Scout, lohn Cooke, Pris Holt, Rick Raften, Peier Rader. Philips Comp (ML): Roel Ter Weel, Jun Bar. Richard Van Hoeft, Hunh De Hie, Fred Van Der Linden.

/s Beak (OB); Devid Cane; Johnston



COMPUTASTARS 1982





COMPUTER MEEKLY IN BRITAIN COMPUTABLE IN HOLLAND



"Is your payroll system this healthy?"

Your payroll is the most changeable and emotionally charged system within your organisation. And if that wasn't enough the government is now imposing statutory sick pay, and who knows what else is just around

You need an on-line payroll and personnel system that is going to expand to meet all your requirements during the forthcoming years, and at no extra cost. The MSA system has been developed as the most flexible and user friendly on-line payroll and personnei system available today. It is also available with printed reports.

All payroll changes can be incorporated without involving the DP department or re-programming the system. And taiking of

changes, the one thing that won't change is your payroll routine. The MSA system is capable of meeting all your existing input and output requirements.

If you would like further information, or would like to attend one of MSA's free seminars then simply complete and return the coupon.

MSA invests over one-quarter of its turnover In development to ensure that your payroll is aiways correct. Can you afford not to know more?



gramming the system. And taiking of The Software Company
Julia Chamberlain, MSA (Management Science America) Ltd., MSA House, 99 King Street,

	Majoculie	au, Derki	illie 2ro i	Le rélablique	ie: majgeni	JERIC (NOTI	3) / IUI I. I	CIEX: 04	/ 4 UU.
	1 .		1 4						
Section - Section	a Lamba - Lating		بمجمعين فنسببن	هبين بيدهبي فنصبين	سيري مبرات الأ	عوينت مثارون	The real Party lives	-	

1	To: MSA (Management Science America) Ltd., MSA	House, 99 King St, Maidenhead, Berkshire SL6 1YF
	☐ Please send me more information about MSA's	
	Down and Departual Menagement System	Company name

1	The lease send the more information about Mich s
1	Pourall and Personnal Management System
	Payroll and Personnel Management System.
	17 Halling to become short \$40 Ala Classical
П	☐ I'd like to know more about MSA's Financial

Manage	ement	Semin	ars.	131.
		D		4.
ime	1. 30 h	44	11/9	्रों ,केल्

) b	1		Ť	el: _		
			2	1			1. 6	
naint	rame	COL	nput	ət ui	odė	ier	ıyımı	DE
		الهرابات					in 15 an	• •

Company address ...

Microsy olso sr Pracilc Compi Softwo and or

yslems '83 is o Compuler Weekly show	Please send delais	of exhibiting of i	/licrosystems	'83 to:	
onsored by Systems International, of Computing, Your Computer, der Talk, Office Systems,	POSITION IN COMPAN	Υ			
re and Microprocessors & Microsystems, gonised by IPC Exhibilions Lid.	ADDRESS			<u> </u>	 1 1
			. ;	TEL	



COMPUTASTARS EUROPEAN FINALS

Bob Kinch of L&G holds the individual trophy aloft as Jeff Horrison and Mike Hawtre appland.

PRODUCTS

Enclosure cuts noise 'by 95%'

IN many countries it is trow law that noise levels in the office must not exceed 55dBA. A typical dai-sywheel printer attached to a word processor will generate noise levels of about 70dBA.

The CalmCover is an acoustic enclosure which encases the printer. It was developed by White industrial design consultants Bruce Renfrew Associates, and ICI

Acoustics.

Acoustic tests in a free field environment have shown that Calm-Cover can lower printer sound levels from over 70dBA, to under 50dBA, says White Horse, giving noise energy reduction of 95%.

Base models will house the prinier, logether with continuous stationery tractor attachments, and may be upgraded to accommodat on automatic paper feed.

Several models and sizes are available to house most printers.

White Horse Acousties (CW), 8-10 Millgate, Thirsk, North Yorkshire YO7 1AA. Tel: (0439)

Several models and sizes are its sights at the rapidly growing than a million units by 1990.

The ITT 3290 is the first multifunction office traminals. The new IBM-compatible 3290 workstation represents the first stage of ITT Business Systems has aimed than a million units by 1990.

The ITT 3290 is the first multifunction terminal for IBM computer users in the UK, designed for use in the traditional 3270 DP ensystems drive to capture a share

As a major

division of the

\$2.2 biltion inter-

national Gould

Gould SEL present

Concept 32—the

super minicomputers.

world's most powerful family of 32 bit

Concept 32 is a full range of

capable of handling any systems application.

Scientitic data processing. Computational

processing. Programme development, Simulation

To date, we have successfully installed more than

200 Concept 32 systems for customers throughout

Industrial Automation. Large process control and

monitoring. Right through to data management.

compatible processors for both end

user and OEM's. A reliable family

Corporation.



Intelligent terminal for IBM users

I'I' Business Systems has aimed of a market expected to reach more

When you're buying

a minicomputer,

invest with

confidence

in the experience

of GOULD S.E.L.

board, printer and diskette.

ITT Busioess Systems (CW), Lion Buildiogs, Crowburst Road, Hollingbury, Brighton BN1 8AN. Tel: (0273) 507111.

Corporation,

Rolls-Royce to

name but a few

The Concept 32

family provides an

unbeatable com-

bination of price and performance. At

the low end, the Concept 32/27 from

only £20,000 is a compact processor

on a single plug-in module, whilst at

other minicomputer system

the high end, the Concept 32/87 is the world's fastes! 32 bit super minicomputer - for

under £100,000 it's over 3 times faster than any

This broad range of power makes the Concept 32

family the perfect choice for your systems application.

the lead of some of the biggest names in British Industry.

So if you're thinking of buying a minicomputer, follow

Dunlop and

A NEW Z80-based microcom-puter system, designed for control Engineering Laboratory specifi-cally for control applications. Control Basic is an extended ver-sion of Basic, including necessary features for real time process applications io educational estab-lishments and industry, has been launched by Datac. The introduc-tion of the Datac MC MicroCon-

Datac gets into

microcomputer

manufacturing

gral power supply operates from 240V AC or 12V AC and fully

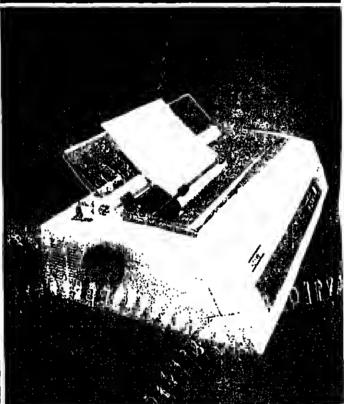
The MC's real time features in-clude real time clock interrupt handling and a scheduler which troller marks the rompany's move into microcomputer manufacture.

Datac is already established as a
manufacturer and distributor of
data printers and liquid crystal enables the romputer performs oumber of different tasks at the displays.

The MC MicroController is housed in a steel and structural foam cabinet built to withstand the rigours of educational and industrial environments. The unit's interest of the control of the c

Interfacing the Dstac MC with external hardware is done with the addition of the optimal experi-mental unit and plug-in accessory boards. Powered from the main computer, the experimental unit it connected by a flexible jumper which plugs directly into the MCs expansion bus.

conforms to safety regulations re-lating to products used in educa-tional establishments. Datae (CW), Tudor Road, Broadbeath, Altrincham, Che-shire WA14 5TN. Tel: (061)



Daisywriter can now

THE new Daisywriter 2000 from any other daisywheel printer.

CPU Perlpherals has been en
Daisywriters can oow warning; auto or manual selectable baud rates from 50 to 19,200; use.

selectable page length settings; working with microcomputers variable pitch and proportional spacing; 20 chps bi-directional printing; linear drive motor, dust-the beginning of the day sets up the second decides with the beginning of the day sets up the contract the operator decides with

connecter cable, the printer can plug into any computer and operate on software designed for CPU Peripherals (CW), Rodd.

Industrial Estate, Govett Aveoue, Sheppertoo, Middx TW17

8AQ. Tel: (98) 46433.

Daisywriters can oow be plugged directly from one computer to another with on change in software. This quality includes coping with signals peculiar to the Pet, which other computers do not

whatever the operator decides will be the escape code and the printer

New printer for UK market

THE Daisy Systems oew M45
printer is now available in the UK
exclusively from Perlpheral
Hardware. The M45 has been designed so that is one hardware to the test of the test

simply changing a plug-in ioterface unit.

PHL will be supplying, as standard, interface module INTI, which has switch selectable M5, is claimed to isst two to three times longer than convendoral times longer than convendoral daisy-wheel print heads.

Peripheral Hardware Monkspath Indostrial Park, Shir, West Midlands, B50 4NY.

Tel: 021-745 3033

PRODUCTS



Jaguar adds to its X25 kit

NEW FROM Jaguar Communica-tions is the ENA range of X25 Packet Assembler/Disassemblers, DMF32 compatible asynchronous

or PADs.
The ENA products enable users of existing asynchrocous and 2780 terminals or computer ports to make use of the new X25 net-works, such as PSS and Euronet. No clunge to existing software is required to make calls to or accept calls from the networks.

Three models of ENA PAD are available, offering between four

available, offering between four and 96 user ports into one to 12 X25 lines. All products conform to CCITT X3, X28 and X29 recommendations. For OEM users, the four-port Micromux is syallable as a single printed circuit board for incorporation into their owo terminal or computer products.

Jaguar Communications (CW),

Eitoo House, London Road, St Albans, Herts ALI 1LJ. Tel: (0727) 32983.

Systime extends 32-bit range

SYSTIME has extended its 800 series of 32-bit computers with the introduction of the 8730 processor.

The new model, which fits in at the low end of the 8000 series based on the Digital Equipment VAX processor — provides extra functions to enhance performance and reduce the cost of expansion.

The 8730 can address up to 5 Mbytes of memory and support up

Bursting

desktop

from your

120 from the General Binding

Company are compact, desktor

systems, designed to meet a wide range of needs in any data processing installation, large or small.

The units fit easily on to desks or table tops, says GBC, and are ideal for small business machine users. "satellite" operations of large dats processing centres.

large dats processing ceotres, or for complementing the use of targer equipment during 'peak'

periods.
The Decollstor 60 decollates small packs of two or four-part continuous, handling carbonless

paper and carboo-interleaved

paper and carboo-interleaved forms equally well. The device is made from chrome-plated steel tubing and lightweight, impact-resistant plastic, and will easily store on a shelf or in a cuphoard.

The Burster 120 has a steel frame, and is cased to lightweight, the complement this mini form.

To complement this mini form

Power to the picture pany, by the use of the simple itick picture controller. capability makes it much essier to

CalComp's IGS 500 is a minicomputer-based interactive design and drafting system.

AX comms control

VAX/VMS Version 3 terminal driver. The VMZ/32 is accessed through standard VAX input/out-

put interfaces.
When fitted with a dual-mode distribution panel, the VMZ/32 can also be configured to active or

passive current loop operation while still giving the same performance level. A choice of 16

operational baud rates from 50 bps to 19.2Kbps can be programmed,

as well as an alternate rate for split-

speed operation.
The use of DMA and SILO buf-

fers substantially improves the performance of VAX-11 series romputers whilst greatly reducing

Mbytes of memory and support up to 2048 Mbytes of disc storage. Its low power consumption and hear dissipstion make it suitable for siting in an office covironment.

A typical 8730 system is bound. ing in an office eovironment.

A typical 8730 system is housed in a 56 × 21 inch cabinet.

Prices for the 8730 start at E31,000.

Series computer aided design/drafting systems.

Russ Cockrell, UK sales maosger of CalConn's systems divided

patible with VAX/VMS Version 3

software. The communications

A typical 8730 system is housed in a 56 × 21 inch cabinet.

Prices for the 8730 start at \$231,000.

Systime (CW), Coocourse Computer Cectro, 432 Dewsbury Road, Leeds LS11 7DF. Tel: (0532) 702211.

Series computer aided designation drafting systems.

Russ Cockrell, UK sales macsion, said: "The effect of the new CPU is to improve workstation respoose times by between 50% and 100% depending on the work

GBC's Burster 120 with the Decollator 60 (top right).

display up to 16 colours simultaneously, from a palette of 4096, on its 19in graphics acreen which features a resolution of 832 × 624

which is directly rompatible with existing CalComp IGS systems can

This cnables the user to pan, or roam, smoothly and rapidly around a drawing, parts of which may welt at times be outside the screen viewing area and by then simply twisting a knob on the top of the joystick, to dynamically zoom into a small section of the drawing and back out sgain at will.

CalComp (CW), Cory House, The Ring, Bracknell, Berks RG12
1ER. Tel: (0344) 50211.

The dynamic graphica capability is further enhanced says the com-

Print-out viewdata screens for posterity

This cnables the user to p

each group of eight lines. A program interrupt is generated after a SILO is full and a software

selected time delay has elapsed, or

after 18 characters have been re-

Sintrom Electronics (CW), 14 Arkwright Road, Reading, Berks RG2 0LS. Tel: (0734) 875464.

DNCS has added two viewdata hard copy printers to its range to supplement the receotly intro-duced viewdata interface option for the CX80 computer output

colour printer.

The new Special colour hard copy unit is plugged into the tape out socket of the terminal and can store two pages which can theo be printed out either singly or together, side by alde with a further option of a double sized print,

The second addition is a black-and-white dolly viewdata printer

and white only viewdata printer called the VMX80. This prioter

durable moulded plastic. It is easy to carry and handle, and will burst one, two or three part continuous forms at the touch of a button. The Burster 120 is easy to load and can be operated, or stored, almost any where.

To complement this mini form

be and ling equipment, GBC has informed also has a number of additional features when used as a normal computer output printer.

DNCS (CW), West Croft Industrial Estate, Manchester Old distribution, GEC (CW), Doman Road, Rhodes, Middleton, Greater Manchester M24 4PS.

To complement this mini form

62162.



Philips Prospect aims to provide cost-effective dedicated word processing

Philips plugs WP gap

drawing facility.

Prospect, although a low-cost word processor, is equipped to perform the romplex number of information management procedures traditionally associated with the Philips P5000 Series. This has been achieved by incorporating the software system of the P5000 range into Prospect, which offers facilities such as file management, glos-sary, sort, locate, graphics and

Philips believes there are three features in particular which make Prospect good value for money. First, the design philosophy accepts that many users of word processors do not want to be able io use advanced software packages the Prospect with a 64K memory, more than adequate for "fullionse" word processing needs.

Second, the constant advance in echnology makes it possible to

THE PHILIPS Prospect sets out would have been needed only a few to fill a gap in the word processor years ago. Third, a modular apmarket. It offers full word processor proach has made it possible to use existing units with ronsequent economies of scale — and of course the advantage of proven engi-neering for the modules concerned. The most obvious example of this approach is that the Prospect uses the same keyboard as the Philips Satellite.

Prospect consists essentially of a single housing containing a VDU, the central processing unit and a dual disc drive. The VDU is a the ability to scroll up to 94 lines vertically and 250 horizontally, Because the entire unit is stalk-mounted, the VDU angle can be adjusted for best visibility. It is also provided with a brightness

Two modules are cable-linked to to perform other complicated data this main unit. One is the low processing tasks. By accepting this standing keyboard, identical to premise, it was possible to design that of the Philips Satellite. The other unit is a bi-directional prin-ter capable of printing at 40 characters per second.

Philips Business Equipment (CW), Mallard House, Torrington Place, London WC1. Tel: 01-580 6633.

Your

has arrived!

FORTUNE 32:16 is now in the U.K The Complete

32 bit Multi-User Desk Top System from only £4375.

Supports up to ` 16 work stations.

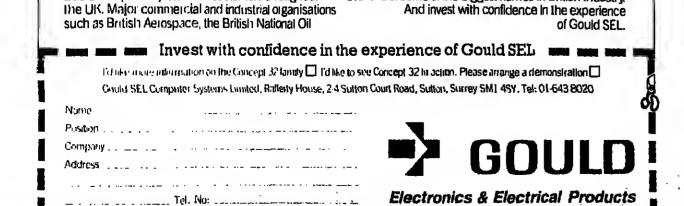
Unix & CP/M Operating Systems.

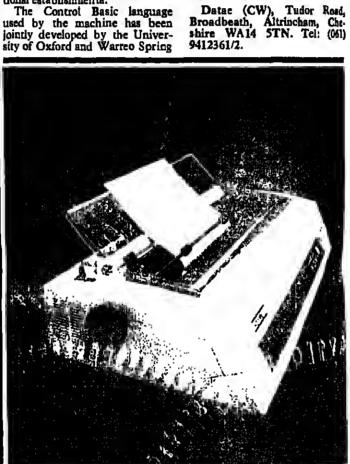
> To find out more about this exciting opportunity

Systems from

MICROCOMPUTERS

Unili 57. Suttona Industrial Park London Rd., Reading RGB TAZ





Daisytoriter 2000 printer from CPU Peripherals.

plug into any computer

hanced by the company. It retains features of the original 2000 model introduced a few months ago — 16K or 48K buffer with 99% full free enclosed daisywheela and 3chip processor control for reliabil-

New features include a universal

The hammer assembly, developed by Daisy Systems for the M45, is claimed to lest two to these

V1100!!!!

Campatible + A.V.C

Printer Port Incleper

EIA or 20Ma1/1

Green or Grey

Ontions

Perfectly matched to your need

CONTACT XENIA WHITE-FOR ADVERTISING RATES TELEPHONE: 01-661 8671

The VDU for DECTISETS. Computers certainly take a load off your mind, until they fail!

A fast and reliable perts and maintenence service for vour DEC™ besed computer system is just es much e necessity as the computer itself.

SK Computer Systeme (Meintenence) Ltd provide:-On-call fully trained Engineers.
A Contract Maintenance Service. * Par-Call Service st compatitive rates. hour or next working day response. Specialist Computer Removal Service

SK Computer Systems (Meintenence) Ltd hold a comprehensive stock of spares end cen service end repair a wide range of DEC' and competible equipment. SK Computer Systems (MeIntenence) Ltd. On-line to meet your Computer's lailure!

'DEC is a trademark of Digital Equipment Co Limited.

TO ADVERTISE IN

THE MARKETPLACE

SECTION, CONTACT

XENIA WHITE ON

01-661 8671, FOR

RATES AND DATA

HAMILION

VMS™, FORTRAN, BASIC

COMPLETE SERVICE INCLUDING

TERMINAL AND MODEM RENTAL

FOR DETAILS AND PRICES PHONE

01-961 6777

OR WRITE TO US AT

HAMILTON HOUSE

NORTH CIRCULAR ROAD

LONDON NW10 7UB

SK Computer Systems

(Maintenance) Limited Pixmora Ind. Est. Pixmore Avenua Laichworth Harts SG5 tJJ

Computer Systems (Maintenance) Limited •

Tal: Latchworth (04526) 79331

625647 SKSYS G

PRODUCT UPDATE

GET MORE PAY LESS. TRY THE **ALTERNATIVE**

Now VAS can offar you The Altarnativa Head feeturing 3330 high raliebility alider technology. This "haed of the future" is dealgned to be alactricelly and nechanically compatible for C.D.C. drivea, Since Ita introduction over 30,000 hava been sold. So try The Alternetive Heed. You'll get more and pay less.

VAS long ego establiahed itself aa the foremost indapendent aupplier of Magnetic Heads, Air Filtera end Megnatic Medie. You can now obtsin on vary quick dalivery 80mb end 300mb Storaga Moduie Drivea, 32, 64 and 96mb Cartridge Modula Drives and the C.D.C. 9334 Metrix Printer. For price



Surplus Computer Parts Sale

DEC Terminals and Micro's

Hazeltine VDU's

Volker Craig VDU's

Servogor Plotters

Robotics/Dilog Controller

PLUS MANY OTHER MISCELLANEOUS ITEMS

WANTED

Secondhand Data General Computer Installation

Only hardwara as follows: MP 100/200 (5 + 5), 1 or 2 VDUs and line printer. Will take over maintenance contract and arrange own collection.

Phone 01-486 8641 and eak for The Controller If you have any such

All Makes of Computers and

IBM 5225-1 IBM 5251-11 VDUs £1,450 each

WANTED

EOB LIMITED

WANTED

nid Computer Bervices, Unit

REDUNDANT/OBBOLETE COMPUTERS

West Station Industrial East Opital Road, Meldon, Essat Tel: Meldon (9521) 54889

光泽大学大学大学

FINANCE YOUR CHRISTMAS PARTY

tert mailing up your scrap facing pa

TICES POR 12 TONNE LOTS AND

DATA CABLES

listing paper

OEC, IBM, HP and Pariphersis ICL 1500 and 1900 Series

IBM 32-C44 ICL 9601 Terminels DEC LS120 EIA Tally 2000 Printer

ABACUS ELECTRONICS p.i.c.
Comme Division, West Harndan Industriel Perk, West Hardon, Essex CM13 3XJ

Supplens: 8:entwood (0277) 811131 Telex: 896786

THE

and quick delivery phona:



AS Computer Parts & Accessories Limited 44 Mesons Hill, Bromley, Kent 01-464 7227 Telex: 896559

SPECIALIST COMPUTER MAINTENANCE PDP 11/34 + SMDs PDP 11/44 + SMDs

We offer top quelity service contracts et competitive prices on the sbove configurations.

Advanced Computer Maintenance 183-185 Union Street, London SE1 0LN Telephone 01-928 0021

IBM PC PERSONAL COMPUTERS

46% internal disk drives. De-tachable keyboard, Mono display. Immediate Avail-ability.

£1,950 Phone: 81-41136

All types of slanderd dela cables supplied by return And cables wired to your specifies or an immediate quote phen Kim Buckinghem of Nex Winton on 01-734 9681 DISC SYSTEMS

abio Series 448 Disk Drives with Fill mplets with S.J. Centroller/Formula to ping Into D.E.C. PDF11 Links with 18xed plus a BMio symovable Caraty. sleige number of dist packs for the fire System into at \$1,366
System into at \$1,366
Add Street Street Street
Ouernity discounts on about

Bob Harrier of Industrial Systems Bystems Bystems Bystems Bystems Bystems at Groevenor Read The Company of the

PERSONAL COMPUTERS

EX-STOCK **MICROLAND**

Phone for damonstration in YOUR office 0428 53918 0428 3736

COMPUTER SERVICES

THE SECOND USER DEC SPECIALISTS Ex-elock delivery of fully teeled OEC medules end peripherals We are also keen buyers of used DEC equipment.

Talephone BOLTON (0204) 55888 Telex: 635431 ElC

WANTED

Tal. 0873 5011

Grundy Computer Sarvices

ON IBM MAINTENANCE Mainstay offer the better alternative to IBM

maintenance-IBM maintenance that's guaranteed to be at least 25% cheaperl Only Mainstay can offer you savings like these, without risk, across the entire range of IBM

And with our reputation for reliability, your security and satisfaction are guaranteed as well. To find out how you can dramatically reduce your maintenance costs, contact-



MAINSTAY COMPUTER COVER LIMITED 41 Fork Lame, Poynton, Cheshire SK12 IRD Tel: Poynton (0625) 873638, Telex: 668365.

60 Magsbyte Olsk Packs (EDS 60 lyps)

Contact Melcolm Williams or Nick Goodwin

NEW/USED COMPUTER EQUIPMENT WIDEP Electronic Brokers SAMPLE UNITS AVAILABLE FOR SALE

Sand for your FREE copy sow. PRINTER9/TERMINALS
LA36 DECwinter || 20mA
LA36 DECwinter || RS232

PROCESSORS

* VT78 32K8 Video Oata Processor RXO1 Qual Floppy Olsk Drive Dieblo Letter Quality Printer Mounted in mobile unit with

PDP11V03 SYSTEM

DISK DRIVES

£1,825 PDP11/70 PROCESSOR

HAZELTINE VDUs SAVE UP TO 54%



FOR SALE

DECSYSTEM 2020 TOPS 20 OPERATING

448K Worda of Mamory, TAU45 Tapa Subsyatem, 8 Aaynchronous Lines.

GOUTHERN AREA SALES TELEPHONE: 0268 710292 winhern Hoed, Remaden Heeti Bitlericay, Essex CM11 1PU

HAND PUNCTIES EXISTOUR

C.D.S.

STHESPONSE

FULLY THAINED PRINCORN

PRICE £30,000 Contact: Garry McEvoy Tal [IRELAND] Charleville

063 501

LOW COST REPAIR North Star, Apple, Pet Micro-Compute System, Floppy Disk Drives, DEC, V1100 CfT 101, ADM, ADDS VC, Hezeldine, Televides VDUe, LA34,
A.W. COMPUTER ENGINEERING CO. on e1-751 2195

FOR SALE

Unicom Word Processors 1 Proceasor - Raythaon PT 1025 3×2.6Mb Driva Unit and saver osrtridga discs
4×8crsen/Keybosrd Units
1×Print Control VDU/Keybos
2×Disbio 1810 Printars

YTS 100 System

Screan/Kayboard Units > ×2 Other Processors Available

Tel: 01-693 0265

NORTHERN AREA SALES YELEPHONE: 0708 216090 Secup Roed, Rewtenstall Lanceshire BS4 7PA

(W)D(P)

01-464 9011 TELEX 680556

DO YOU USE AN APPLE SYSTEM

LOCKING AFTER IT IS OURS

C.D.S. COMMERCIAL SYSTEMS LTD.

"ON-SITE" MAINTENANCE SERVICES

IN YOUR BUSINESS?

Flectrical and electronic apparatus and instruments, and sciou-tific and control apparatus and instruments, all included a Class 9, computers and data processing apparatus; all adapted to produce a coloused display; and parts and hittings included in Class 9 for all the aforesand goods.

FOR SALE 2 oli/2nd use/ RMO 3-A0 and SBI VAX*

11/780 CONTROLLER £12,500 Complate Or will split RMO 3-AD £4,750 Each Tel: Leichworth 04626 79331

ATTENTION

Do you have any second-hand or redundant computer equipment that you would like to

Do you offer any services to the computer industry and would like to advertise them?

If so, why not advertise in the Marketplace section of Computer Weekly.

Our Compec Preview issue on 11th November will not only go to our regular circulation of over 100,000 but there will be an extra 15,000 copies available at the exhibition.

For more details, please telephone me, Xenia White, on 01-661 8671

"FRESH

NOWAK DATENTRAGER **GMBH**

D-1006 Britash 2 Telefon (02104) 31096 Teles 8381180



Belore a last dwnalling supply of air filters runns vour working asphere or long-awaited replacement libers make you hat umler the collar, we'll pur your used on there out to posture Our needly ingred-up stock is always at the ready;
Air filters for uniquetic disc dives for a wide selection of makes,
Dublo, CDC, Cacho, Winges, Jones, Perice, Ampey, CalComp,
Meninex, Ball, Perkin-Ebnar and many more,
Our incluional Service Packing makes for even more breathing space: Abignetic Hearl - CDC Magnetic Heads — Tripe Heads — Disc Drives Aspare Phitsi — C.E. Cantidges — Rigid Discs Our proble service is always at your disposal

DEC and DATA GENERAL Buy, Sell or Trade

Sample of stock \$653 VDU
 \$6Mb Diek Drive
 256Kb Eclipse Memory
 Nova 4/X Memory
 LP2 Printer
 DL11-W Call: Alastair Dods, 01-467 1985 or 01-467 8469

Thomas Business Systems, Ltd.

● BA11-KF ● RK05-J ● RK11-D

We buy and sell new/used

DEC®

£500,000 stock of Systems, Processors, Peripherals LSI-11, PDP-11 and VAX-11 New 11/23 plus systems

Dectrade Ltd

vork Höuse, 20 Ludlow Hill Road West Bridglord, Nottingham Telex: 377676 NETWAK Tel: 0692-232265

n ere trademarks of the Digital Equipment Corporation

TEXT OF THE PARTY
Burster for small users

ALACRA, supplier of coroputer forms handling equipment, has announced a new addition to its Astro range of hursters and decollators. The Astro range was launched two years ago to meet the growing demand from smaller computer installations for equipment which would handle the output from these at an economica

The new addition is the Astro 1600 hurster, aimed at the small-

to-medium size user.
The Astro 1600 bursts computer stationery into separate sheets. It can handle form depths hetween three and 12 inches, and can also be fitted with roargin trimmers to remove the sprocket holes from the computer atationery. For typical computer forms of 12 inch depth (approx A4 size), the Astro 1600 can hurst 7,700 sheets an

Alacra (CW), Iveagh Aveoue, North Circular Road, London NW10 7UJ. Tel: 01-965 0311.

Forms for leading micros

DECREASING COSTS of DECREASING COSTS of microcomputers and husiness software packages have made them a viable proposition for even the smallest company. But there is still a need for well presented documentation to feed into and be processed by the computer.

Moore Paragon, specialist in husiness forms, provides a range of low cost and simple-to-use business forms packages available off-the-shelf in preset layout form.

These packages are claimed to cover 90% of normal business transactions such as invoices, de-

ransactions such as invoices, de livery notes, receipt notes, state ments, remittance advices payroll, giro credit forms and multi-purpose indomiciled forms. Also available is a special Moor Paragon 'Speedimailer' form construction for confidential pay advice which can be mailed with

The forms packages can be pro-vided for a large oumber of leading microcomputers such as Apple, Tandy, Commodore, Adler Alpha-tronic and Olivetti using a wide variety of established software accounting programs like Systematics, Tabs, Padmede, Tridata, Informex, HB, ISA Spectrum, LSI, MPS, Bristol Software and

Specifically for Systematics software packages, Moore Paragon has developed both input and output documentation. This means that data such as telephone sales orders, hand-written or typed invoices can be entered directly onto specially designed multi-part sets in a logical sequence so that one of the copies can be used as the computer input document.

Moore Paragon Business Forms (CW), Moore House, 75-79 Southwark Street, London SEI 0HY, Tel: 01-928 9022.

UK launch of Olivetti's multi-task minicomputer

OLIVETTI has announced the OLIVETTI has announced the UK release of its multi-workstation, multi-function computer called the \$6000, which has already netted £5.5million for the company since its launch in 1981.

The \$6000 has been conceived with the idea of combining the benefits of personal workstations with minicomputer power. Its

with minicomputer power. Its multi-tasking capabilities allow several jobs to be performed simultaneously and permits information to be used at the same time by

different people.

Through its Boss (British Olivetu System Supervisor) monitor the S6000 manages information, ensuring that confidential data are kept secure and assisting with the joh of organising tasks into order of priority. An additional feature is that workstations can seed and rethat workstations can seed and receive electronic messages hetween

Some of the S6000 hardware capabilities ioclude self-diagnosis of faults, modularity, expandabil-



Oliveni's \$6000 multi-terminal computer system

packages written for the S6000, including some for the accountancy and legal professions and for ty and ergonomic design.

A suite of specialist software veloped by Olivetti, the latest be-

ing a package for Insurance Bro-kers. British Ofivetti (CW), Olivetti House, 86-88 Upper Richmood Road, Putney, London SW15.

Mass storage for Multibus-based microcomputers

aided design, husiness graphics, process control and database man-DATA Design Techniques has introduced to the UK a range of high mass storage systems for use with Multibus-based microcomputers.

Manufactured by Data Systema Design and designated the DSD 700 Series, the new systems com-prise a multi-function controller plus a 19-inch rack chassis unit housing the storage peripherals. The DSD 7215 multi-function controller can be supplied separately for those wanting to build up

their own peripheral configuratioo using Winchesters such as Shugart and Quantum. The cootroller requires one Multihus slot and supports a maximum of two 40 Mbyte Winchesters, two eight incb double sided, double density one Mbyte floppy disc drives, and a 20 Mbyte quarter-inch cartridge tape streamer. Advanced architecture allows "pinions" of deas to complement pelining" of data to complement disc oriented operating systems such as Unix, and permit usage in

The DSD 7215 uses a phase

locked loop technique to provide on-board separation of Winchester and floppy disc data - an external separator is not oeeded. A proprietary ECC integrated circuit handles both the 32-hit error correcting code for the Winchester(1) and the CRC check for the floppy The DSD 700 Series systems are

supplied in four basic configura-tions: DSD 734 comes with a 10 Mbyte Winchester plus one Mbyte floppy, and DSD 736 has a 40 Mbyte Winchester with a one Mbyte floppy. In Models 724 and 726 the floppy disc drive is replaced by a customic content of the floppy disc drive is replaced by a customic content of the floppy. placed by a quarter-inch cartridge tape streamer capable of saving or restoring Winchester data at the rate of 10 Mbytes in about two

Data Desigo Techniques (CW), 68-70 Tewin Rosd, Webapplications such as computer wyn Garden City, Herts AL7.

DG-compatible storage systems

its line of Data General (DG) compatible storage systems with the introduction of a new option for DG's MV6000 and MV8000 com-

puters.
The new 3400 Storage System is designed to operate oo the burst multiplexer channel (BMC) of Data General's MV6000 and MV8000 minicomputers running under the AOS/VS operating

tion can be supplied using cither removeable SMDs or Winchestertype drives. This permits users to select storage systems with capaci-ties ranging froto 50 Mbytes to 1,024 Mbytes per cootroller. The 3400 Storage System's abilsbility to mix drives of different capacity on the same system gives the user a flexible system which can be tailored to meet individual storage requirements, says

The new option may also be configured in a dual-channel mode which permits two CPUs to access a commoo database. This is claimed to result in increased performance and reliability. Zehra, Vulcan or Kismet emula-

prises a single PC board controller installed into any high-speed peripheral slot for connection to the BMC hus, a multiplexer panel mounted within the CPU cabinet to facilitate connection of any SI (to facilitate connection of any SI

ity to support a variety of software-transparent emulations - plus the accessories and full operations

The hasic 50 Mbyte 3400 Storage System, emulating the Zebra 6067, is priced at £9,200. Delivery is 30 days ARO.

Now in its 14th year, System Industries has become a leading independent supplier of data sto rage systems for Digital Equip ment Corporation and Data Gen eral users. SI has several thousand installations, many among Fortune 500 companies, and a worldwist sales/service network operating from 50 locations.

System Industries (Europe) (CW), System House, Guildford Road, Woking, Surrey GU22 7QQO Tel: (04862) 5077.



The Star Computer Group's Auditor 3906.

Star aims its low-cost system at accountants

system is the first new computer to CPU cahinet.

be released by Star since its acquisition of Hartley UK.

"The Auditor 3906 brings professional computing within reach of even the sole practidoner, providing computerised administration and client services that larger firms of accountants now take very much for granted." says take very much for granted," says Janine Blackley, Star's marketing

"The base configuration has been priced at £10,500 - or leased

for £75 per week – to attract the smaller user," she adds.
The Auditor 3906 comes with applications software for incomplete records and accounts production with integrated word processing, time recording and fees ledger, sales and purchase ledgers, payroll and financial modelling, all backed by training.

The stagnomically designed

A LOW-COST computer system
aimed at the small to medium-size
accountancy practice has been
launc bed by Star Computer
Group

Group

A 10 Mbres

A 10 M Called the Auditor 3906, the Winchester disc is built into the

The disc management system communicates with the floppy discs rapidly. The entire cooteots of the Winchester can be backed

of the Winchester can be backed up in under four minutes.

The 3918 printer, which comes with the system, is dual-purpose and gives printing at up to 180 chps for working papers, but it can be slowed down to 75 chps for letter printing quality and word processing applications.

Ink-jet addressing system

FBM, the addressing and labelling systems specialist, is launching Jet-address, a high apeed, direct printing system designed to revolutionise cooventional addressing and labelling methods.

and labelling methods.

Jetaddress uses the new multi
array ink-jet technology, the essence of which is a oon contact
printing bead with oo moving
parts. The ink-jet head fires small
droplets of ink at very high speed
directly on to any surface — covlones, plastic base, cartons are le lopes, plastic bags, cartons etc. It will also print clearly oo to uneven surfaces and ready formed packages.
FBM Business Machines

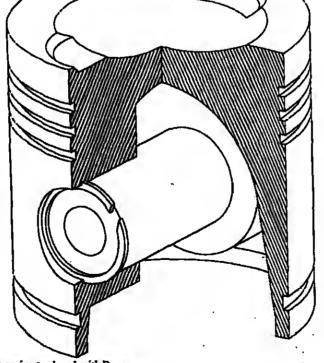
(CW), Chapel House, High Keynes MK19 6HD, Tel: (0908) 568555.

The standard industry specifica-tions sets 3,500,000 revolutions as life of a disc. Verbatim claims that its Datalife discs, which are distributed in the UK by Willis Compu-

be slowed down to 75 chps for letter printing quality and word processing applications.

Star Computer Group (CW), 64 Great Eastern Street, London, EG2A 3QE. Tel: 01,739.7633.

Story Computer Computer Computer Supplies (CW), PO Box 10, South Mill Road, Bishop's Stortford, Herts, Tel: (0279) 506491.



A RANGE of floppy discs from the Verbatim Corporation are claimed to last five times longer than the industry standard and are being offered with a five-year warranty. The module to Dogs, the discussion of the

Boxer is a true 3-D solid modelling facility which enables the design engineer to carry and utilise complete information on solid bodies and is therefore suitable for automated drawing, manufacture, interference check-ing, mass calculation, visuallea-tion, and robotics, for example: With the introduction of Boxer,

While computer-sided draughting has for some years made use of three-dimensional software, such software has normally the form of "wire framing" or "surface modelling". True 3-D solid modelling. modelling systems are rare, says

Pafec (CW), 51-53 Loughborough Road, West Bridgford, Nottingham NG27LA Tell (16602) 214627 the design engineer now has the (0602) 814673

MANTIS

MENU SELECTION

RUN A PROGRAM BY NAME DISPLAY A PROMPTER....

DESIGN A SCHERN.
DESIGN A FILE
DESIGN A PROMPTER
DESIGN A LOGICAL VIEW
DESIGN AN INTERFACE

DESIGN A PROGRAM. DESIGN A SCREEN.

MANTIS is the unique 4th generation applications development language from Cincom which improves on-line application development performance 8-10 times.

Unique

MANTIS is the only on-line development tool that permits the user to develop an application from

beginning to end in one sitting. It features a host of powerful applications development techniques such as:

Top down design;

 Structured coding; Step level refinement of programs and systems:

 Prototyping téchniques.

Using these features the MANTIS user creates screens, creates files, writes programs, tests/develops applications, documents systems, puts systems on security menus and releases applications for production.

Powerful

MANTIS has the power to dramatically reduce your backlog and improve productivity—but it's also friendly enough to allow the end-user to sort out his own problems.

The key features of this unique language include:

• free form interactive screen design conversational file design and allocation

logical data views

on-line documentation

 computer aided instruction facilities Directory listings with automatic

maintenance Moster terminal security controls

 Independence to interface with any existing file structures or databases

Batch or on-line hard copy

It's from Cincom MANTIS Is unique. MANTIS is powerful - but it's easy to use MANTIS Is SIGN ON AS ANOTHER USER. DIRECTORY OF PROGRAMS. from Cincom, the world's DIRECTORY OF FILES..... DIRECTORY OF PROMPTERS. largest independent software manufacturer. So It's intergrated with Cincom's famous range

of database / data communications software And of course It's maintained worldwide by Cincom's

comprehensive support network. MANTIS is already installed by many of the leading computer users in the UK. They know it. works, and we want you to also discover just how ibometrni aud akudimic a broafictivityltooi ikityiriis isi So If you would like to know more about the iproduct – or speak to a MANTI\$ user + please ring or write to:

Cincom Systems International, St. Ives House, Maldenhead, Berkshire SL61QS. Telephone: (0628) 7273 Telex: 847198

Cincom Systems International, Addmson House,

-Shambles Square, Manchester M3 1RE. Telephone: 061-832 4332 Telex: 665657.



Any good DP Manager could go to



for Distributed Data Processing

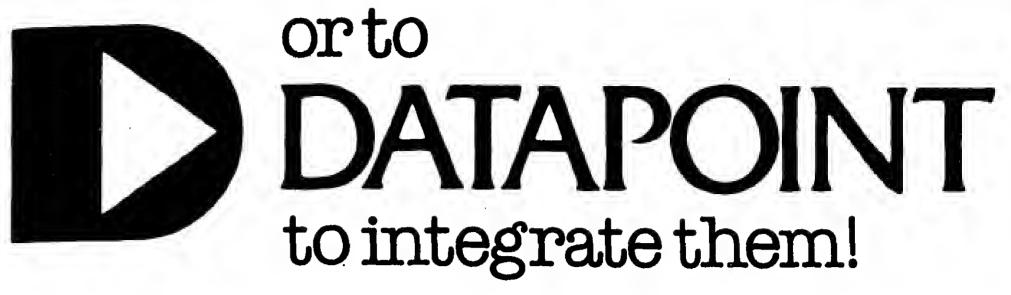


for Personal Computing



for Word Processing

RANKXEROX for Local Networks.



We have to admit it, our competitors are very well known to you. Each one of them is famous for something or other.

But when it comes to providing a total package-a complete computer capability-that's where Datapoint scores.

We have the individual parts of the technology, of course. But no-one else has had as much experience and success in putting them all together into an integrated system.

That's Datapoint's real strength: an ability to take all the elements-Data Processing, Word Processing, Telecommunications, Electronic Mail -and integrate them into a single system accessed from any single workstation.

And to prove that we really do know what we're talking about, Datapoint have already installed over 4,000 Local Networks all round the

world. Many more than our competitors.

Not that we're resting on our laurels. We're researching further developments involving storage, text, graphics and voice. All with the same objective-to make running a business, any business, more efficient and more productive.

So, if you want part of the picture, take a look at what our competitors are offering. For the whole story, you're better off checking with Datapoint.

Name:	
Company:	
Address:	
	C



DATAPOINT

THE COMPLETE COMPUTER COMPANY

The Datapoint Road Show will be visiting major cities around the country. For further details please ring, 01-459 1222.



F YOU DO GO BROKE IT HAS

The guide sets out all the aspects of SSP in a logical sequence for a

reader anxious to get to grips with

its implementation. For quick reference it is divided ioto sections

such as "Preparations", "Ground Rules", "Decisiuna" and "Paymeots". Each section deals

with its topie in great detail, and

there are plenty of examples to illustrate the main, or particularly

debatsble, pointa.
At first sight £30 seems a high

price for a paperback, but the contents more than justify the cost. A consultant with specialist

knowledge of SSP would charge

ufinitely more for a lesaer quantity

of advice, and the intricacies of

SSP would seem to necessitate

some form of outside help for most

A SIGNING-ON FACILITY

PEOPLE



HANDLEY . . . National Soles Monager at Osborne UK.

THE SPRINT 9

Test drive our

hot new daisywheelers

If you've always wanted letter-quality printing, but the cost has put you off, then the SPRINT 9 and SPRINT 10

systems -- at prices that will let you forget all about dot-matrix terminals. With speeds of 35, 45 and 55 cps

(average English text, not burst rate), the reliable high

Qume (UK) Limited

— A British Company of ITT —

owater Close Reading, Berks RG3 tJT Tel: (0734) 584646 Telex: 849706

performance of SPRINT terminals leaves the crowd

behind Provert to your self with a test drive

Call or write your Quine Distributor

are for you. Now you can have the same high quality

print - usually only available on word processing

pointed two customer service ted international sales manager st ranch managers. Derek Jordao, formerly South-east branch supervisor, becomes customer services South Centrol branch manager. Paul Henderson, also a forince branch supervisor for the company, takes responsibility for the South-eastern region.

Engineering services manager st Megabyte is Hugh Martin, who ioined the company 18 months ago

sector accounts. Juan Richard of Richard joins CTL as senior sales executive. He was previously a sales with the appointment of Richard tive. He was previously a sales of Gill. He formerly worked as a least twee time.

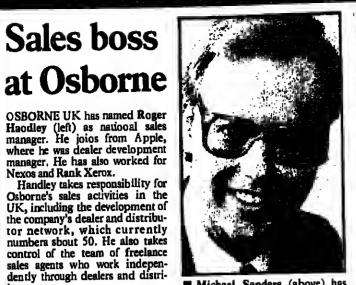
Rediffusioo Computers has ap-Future Technolgy Systems. He was formerly director of operations

> CTL has extended its push into the public sector market with the oppointment of a senior sales executive and a systems consul-tant, both responsible for public sector accounts. Jahn Richardson

becomes systems consultant. He was formerly project manager and software consultant at S.P.

> Burr-Brown has promoted Rob Stevens from area sales manager to a new position within the company - military account manager. He has been with the company for

Scan Computers has expanded executive with ICL. Ray Greaves Level 2 sales executive with NCR.



Michael Sanders (above) has been appointed director and gen-ers manager of Boston Leasing, the new UK subsidiary of The First National Bank of Boston. He was formerly a vice-president in the European, Middle East and Africa energy division of the Bank of America, based in London. He has also worked for Ciubank and National Westnunster Bunk.

■ AIM's chief executive Clive Telfer has been elected chairman of the Humberside branch of the British Computer Society for the 1982/83 term. This is the second time he has been elected to office.

Switch sulculion of interface parameters and forms handling

Automatic proportional spacing without decreasing system throughput, sets the new

out service costs and reduce

For the highest accuracy in the history of dassywheel printing, our Microdrive "carriage drive mechanism has no cables or

Qume [wk]

ACCESS DATA COMMUNICATIONS LTD., Unit 17,

Eskdala Road, Uxbridge Industrial Estata, Uxbridga,

London Road, Earley, Reading RG6 1AZ. Tel: (0734) 61031.

SG DATA SALES LIMITED, Unit 9, Fakracres Industrial Estate

DAISY TERMINALS LIMITED, Bridge Road, Haywards Heath, West Sussex. Tel: (0444) 457546.

ROHAN COMPUTING LIMITED, 52 Coventry Street, Southarn, Warwickshire. Tel: (092681) 4045.

ALPHATECH COMPUTER SYSTEMS LIMITED

Unit 6d. Rose Industrial Estate, Cores End Road Bourna End. Bucks, SL85BA, Tel: (06285) 28237

BYTECH UMITED, Sultona industrial Park,

Middlesex UB8 2RT. Tel: (0895) 30831.

llows simple OEM system

■ Caroline Tee has joined the Gang-Nail's software division, set up nine months ago to provide software and consulting services to recruitment specialist Comesp as an overseas consultant. She will the timber and building materials specialise in recruitment of industries, is to be streogthened with the addition of three more software apecialists. Dr David Collington is senior software con-Europeans for permacent sppointments in Saudi Arabia, operating from Comacap's European offices, Tee's previous job was with London-based recruitment agency sultant. He was previously senior engineer with Computational Computastaff. Mechanics. Adrian Beard and Alan Large join the company as software engineers. Beard joins from CM Coossitants and Large



New marketing assistant at Peachtree Software International is Greta Forster (above) She has spent the last five years with British Airways, joining in 1977 as passenger services agent and later working as a stewardess. Fdlowing this she was an sssistant accountant and then spent two vears as scheduling officer.

■ Fred Luyt has been appointed managing director of ICL South Africa. He succeeds John Strakey who retires as MD, but remains on the board of the South African company. Luyt joins ICL from Sperry Univac South Africa, where he was managing director. He joined Sperry Univac as financial controller in 1977, and took up his appointment ss msnsging director two years ago.

Lord Jellicoe, chairman o Tate and Lyle, has been appointed chairman of the British Oversess Ferranti Computer Systems' Trade Board. He succeeds Lord Limerick who has held the post Bracknell division has appointed Jeffrey Thatcher (above) as commercial manager — a new post within the divisional sales depart-

Kenneth Ward, director of co porate relations for the Racal Electronics group has become a Electronics Engineering Associa-

How can we improve the DP industry's image? 1DPM Ken

branch/BCS Kent Branch. University of Kent, Canterbury. 7,30.

Tomorrow's programs

Yesterday, today and tomorrow. IDPM Birmingham branch/last

NOVEMBER 8
Artificial intelligence—the extent of Al and its relationship with the fifth geoeration. IDPM Scottish branch. Edinburgh University, Students Association, 69 versity, Students Association, 7.30.

Viewdata. Conference on the state of the art. Institute of la formation Scientists WP and con-

The Pleasance, Edinoury

NOVEMBER 2

NOVBMBER 3

NOVEMBER 4

Birmingham. 6.00.

NOVEMBER 8

JANUARY 5-6

DIARY

applications programmer.

sales manager.

Bill Smith, who joined Mellor-dats as financial controller, has

been sppoinred general manager.

OCTOBER 26 Data protection. BCS South Wales branch. Royal Hotel, Cardiff. 7.00.

Theoreuc heuristics. BCS Ma-

ment - with responsibility for all contracts and purchasing. He has been with the company for 20 years, latterly as assistant chief eo-

where are they now? IDPM Central London braoch. Altergo, Imperlal House, 15-19 Kingsway London WC2. 6.00. thematical Programming Study Group. London School of Econo-mics, Houghton Street, Aldwych. London. 6.30. Micros for mainframers. BCS Sussex Microcomputer Group. tute of Managemeot Consultants/BCS. Birmingham and Midland Insultate, Margaret Street, Lecture Theatre, Brighton Technical College, Pelham Street,

OCTOBER 29

Jubilee dinner. BCS Birmingam, Coventry and Wolverhampno branches. The Council House Birmingham, Tickets limited, Apply to Martyn Davey on 021-743

Talk by the Rt Hon George Thomas, MP, Speaker of the House of Commons, BCS and other professional associations.
Town Hall, Cheltenham. Apply early to D. Went on Gloucester 416301.

puter information special interest group. Details Mrs Bird on: (051) 645 2000 ext 8611. CONFERENCES

Information Technology Minister Kenneth Baker will give the opening address at the IT82 and Women conference to be held in London on November 8 and 9. The Monday programme will cover the major new technical applications, burnan aspects of IT and how it will affect women, and increasing management opportuniincreasing management opportunities for women. Workshops in the afternoon will cover the relevance of IT to small businesses. IT work organisation and decision making and practical demonstrations. Shirley Williams MP, president of the Social Democrats, is

the star speaker on dsy two. The programme includes IT in schools career opportunities, and mass production in the Philippins.

There will be educational policies on II. women's networks and II, and employment, job security, and employment, job security, part-time work and re-entering its labour market. Fee is £15 per per son (£10 for the unwaged) and the includes tea and lunch on both days. Places are limited to 200, and apply early to the organises. See a London SE5. Tel. 01-326.0264. Videotex threat

to invasion of privacy

Teletext sad Videotax in the Uoited States: Market Potential, Technology, Public Policy Issuea. John Tydeman, Hubert Lipinski, Richsrd P. Adler, Michael Nyhan, and Laurence Michael Nyhan, and Laurence about and what it portends for Zwimpfer, McGraw-Hill Publi- society.

catioos Compsoy, 1982. \$34.95.
UNTIL recently, discussions of videotex and teletex in the popular media have frequently, and unforthereby transform society.

Mercifully, the latest offering in McGraw-Hill's Data Communications series avoids this error, and the result is a comprehensive, reasoned volume that should be of use to many segments of the public interested in viewdsta. These in-clude technicians and technolo-

about and what it portends for Working with a grant from the National Science Foundation, a

government agency, the authors have explored many of the areas tunately, been plagued by a com-moo error of thinking - the as-policy development, such as prisumption that because a particular technology or development is feasible, and perhaps economically visble, it will be adopted and will and so forth. For the most part, and so forth. For the most part the authors show insight and avoid repeating common errors.

For example, they have in-cluded a fair amount of information relating to privacy issues, discussing the need for privacy, the options available, sod so on. Privacy issues are io effect a consequence of the computer age, and

A student's useful introduction to computers



usually not an overriding concern of those developing and marketing technology. But in receot years everyone involved with the computer industry has had to face these issues, though they are often seeo as peripheral, or an descriptive sspects of an audience, annoyance diverting attention such as age, education and so on. from the main task.

The book has some shortcom-

tinn of design, and for that matter

SSP — An Introduction and Guide to Statutory Slck Pay. Peterborough Software £30. STATUTORY Sick Pay regula-tions are due to come into force to April 1983, and will mean that responsibility for sickness benefit will move from the Department of Health and Social Security to individual employers. One might think there's plenty of time for implementation, but a glance at the complexity of the rules governing the new system shows that this Implementing SSP will mean major changes to payroll and perings — for example, the index shows no entries under the subject sonoel systems throughout the country. The first problem in

many cases will be understanding the official guide issued by the Peterborough Software, which supplies the Unipay payroll package, has come to the rescue, with

easy-to-read and understand

Maggie McLening

IT guide for managers

From Hardware to Software: An From Hardware to Software: An It is divided almost evenly between hardware and software. The Graham Lee, MacMillan Press, first 13 chapters give a complete which esplain the differences between the course of the binary system.

WRITTEN for undergraduate and

The book is clearly the outcome practical work in classes.

Hardcover £16.00. Softcover description and functional explanation of a theoretical design of a theoretical design. nation of a theoretical digital computer. The detail is concisely A level and polytechnic level students, this volume is one of a series edited by Frank Summer, professor of microcomputing at the level and polytechnic level students, this volume is one of a successful application of italics to the level and polytechnic level students, this volume is one of a successful application of italics to why commercial and scientific machines are built the way they professor of microcomputing at the level and polytechnic level students, this volume is one of a successful application of italics to machines are built the way they are. Currently, the speed of evolutions of levels and polytechnic level students, this volume is one of a successful application of italics to machines are built the way they are. Currently, the speed of evolutions of levels and polytechnic level students.

If anything, there is too much decimal numbering system before moving to the detailed consider-

which esplain the differences be-

It is also a pity that the book fails to develop any perspectives which might lead a student to tween the ideal teaching-oriented computer and common commer-cial machines. In those chapters question, as the Japanese do, the acknowledged shortcomings of the various languagea. Apart from these minor quib bles, this is a clear and hasic intro

well and clearly laid out.

heading "psychographics" - the study of psychological or behav-

ioural aspects of an audience or

"demographics" - the study of

Howard Karten

This Is It: A Manager's Guide to Information Technology. John Eston and Jeremy Smithers. Philip Allan. Hardcover £18.00.

The reader is then led auto many technologies — computing, telecommunications, electronics, TV and so on.

The reader is then led auto many Softcover £8.95.

THIS IS a book for working managers, written by a pair of academies at the London Business School. The authors take the reader via a duction to computing, which

short and now well-known history of the computer industry to iuormatioo technology which is Kevin Cahill | clearly portrayed as encompassin

The reader is then led into many of the secrets of distributed data processing, teleprocessing and microelectronics, Again, much of the material is familiar. But technology is never fully understood, and often under-milised by those without an adequate grasp of the



Allittakestoturn your Digital terminal into a personal computer.

one of four personal computers with printers. a printer or VDU made by Digital you could win And a year's free service.

It's as easy as picking up your pen and answering these questions.

Send your entry to Field Service Competition, Digital Equipment Co. Ltd., Digital Park, PO Box 65, Imperial Way, Reading RG2 0TP by 31st



computer system including an LA50 printer. computer with VT100 and printer Nome & oddress of your company.

Type of terminal Serial no. of Terminal What type of computer is your terminal connected to?

Would you like to receive the latest information on our personal computers? YES/NO Do you use Digital's Accessories and Supplies Group? YES/NO.

Is your Digital hardware on one of our Field Service contracts? YES/NO

Complete the following sentence in no more than 15 words: I expect a maintenance service contract for personal computers to_

Phone no

For full competition rules please send an sale, to the competition address.

Doing more. The Digital difference.

H

Clessilled Department Quedrent House The Quedrent Sutton, Surrey SM2 5AS

Fisid Galas

Consultancies Salas

6irmingham/8rist Vic Sheret 021-356 4838

Box nos. £5 extra. Address beck to c/o Computer Weekly, Classified Dept., Quedrant House, The Quedrant, Sutton, Surrey, SM2 BAS

Scan your horizons

Software Team Leader S.E.England to £13.5k

realise that the world's leading electronics and panies depend on attracting people like world.

ealise that competition for the best takent i Atremely keen, and therefore a major feature of our policy is to offer unrivalled opportunities in terms of Training, Career Advancement and Innovative Software Applications.

If you consider your two years-plus R/T program-ming deserves recognition and work satisfaction. If you wish to become involved with the development and production of Systems Software for the following:

- **Radar Simulation**
- **Displays**
- Data Handling Systems
- **Air Traffic Control**

ONY HATHERALL or ROGER

Computer Search 01-404 0152



IBM PL1 IMS DB/DC ANALYST/PROGS.

IBM COBOL IMS DB/DC ANALYST/PROGS.

IBM ASSEMBLER VM ANALYST/PROGS. LONDON

VAX DIBOL (VMS) ANALYST/PROG.

DEC DIBOL CTS 300-500 ANALYST/PROGS.

For further details contact NIC POLAND TLP

A division of Tate & Lyle Industries Ltd. Leon House, High Street, Croydon CR9 3NH (ՄԱ) (Man. .

NEW ZEALAND



New Zeeland has a lot to olist intending immigrants in that EDP Industry, A haalthy and growing DP markal, logather with an axcellant illastyla — uncrowdad baachas, vasi reserves of lorast, axcellent fishing, skiing (both snow end walar), surfing, boeting, and mounteinsaring.

Our cliant is a highly euccessful supplier of edvanced computer hardware and soliware lachnology to the New Zseland markelplace.

SYSTEMS

ENGINEERS

We are looking for psopla with proven

You must have Datepoint experience

In DOS and/or RMS; ARCCOM or Multilinic ARC or Assembler experience

As a result of repid growth they wish to appoint

NETWORKING SALESMEN

osugment their team of professionsis. A successful track racord of selling distributed processing ayatams is mandstory.

You must have at less! live years EOP ealss experience.

Experience in Datapoint or elmilar equipmani would be adventagaous.

Contect Grahame Brownile et:

STRAND COMPUTER RECRUITMENT LIMITED 40A CASTLE STREET, GUILDFORD SURREY GU1 3UQ

TELEPHONE: GUILDFORD (0493) 34444/6

IBM JSP

Analyst/Programmers CONTRACT/PERMANENT Contact: Dennis Andrews

AJK 72c Church Road, Hove BN3 2FP Tel: (0273) 721829

NUMBERS

Middle East

Permanent career opportunities in a growth environment

The Middle East has been the scene of vast business expansion in recent years resulting in an almost constant demand for skilled technical staff in a variety of areas. Not least of these has been Data Processing and our client, with their network of sophisticated IBM mainframes, is looking for a number of skilled IBM computer profassionals.

OPERATIONS

1. Shift Leaders with at least 4 years experience of IBM 3033's and 370/168's using MVS, JES2 or 3, TS0 and other software facilities associated with a TP network and database environment

SOFTWARE SPECIALISTS

to £22.5K

1. Senior MVS/SP, JES 2 Systems

- 2. Senior VM/SP/CMS Systems
- 3. Program Product Installer with knowledge of IBM Assembler
- 4. ACF 2 or RACF Expert to administrate operation of security systems.
- 5. Technical Writer with exposure to large systems in developing standards.

SYSTEMS

& PROGRAMMING

Analyst/Programmers with 3-5 years experience in two or more of the following areas:-8. One or more of the following languages: PL/1, FORTRAN and MARK IV.

- b. One or more of the following applications: Materials Supply, Financial & Administrative, Oil & Gas Operations and Engineering Systems.
- c. One or more of the following facilities: TSO/SPF: IMS DB/DC and/or IMS DB and ADF; Graphics experience or experience of simulation, e.g. GPSS or MPSX.

These posts are initially on bachelor status and formal educational qualifications are

Living costs are assisted by subsidised air conditioned accommodation, free food, generous allowances on vacation, flights etc. and excellent company operated recreation facilities are provided

> Contact Penny Stock (or Kay Stebbings for Operations) on 01-836 8411 or write to Computer People London



We've got the pull. You get the satisfaction

Freelance & Permanent Vacancies

SOUTHERN 0252 516141

Analysts with Insuranca or Assurance Expartiaa

BURROUGHS 6800 COBDL Analyst/

Proga CIS COBDL Programmars, meny reqts CORAL 68, All lavals OATA GENERAL COBOL and INFOS/

AOS Programmars DATAPOINT Programmars FINANCIAL MDDELLING Analyat/Prog

with EPS/FCS HAROWARE & SOFTWARE Engineers HONEYWELL DPS8 OMIV COBOL. Progs

HONEYWELL IDS/TOS COBDL Programmers HP 3000 CDBOL Progremmars IBM OS COBOL Programmars with TSO-

IBM CDBOL with IMS DB/DC and ADF Anelyst/Programmers

IBM CDBOL Progremmars with RAMIS IBM CDBDL CICS with RPG II IBM COBOL with CICS/DLI

IBM COPICS EXPERTISE, many raqts IBM PLI aoma with CICS

IBM Mark IV IBM 8100 DPCX/DPPX COBDL

1BM SYS 36 RPG III IBM SYS 34 RPG III ICL VMEB IDMS or TPMS, all lavala

ICL Analysts with IDMS or TPMS ICL 2900 VME Tachnical Support, all lavals

ICL SYSTEM 10 or 25 Aasamblar Progs. ICL 1500 Asaamblar

ICL Consultant with PERICLES ICL ME 29 Programmars

ICL Consultant with Sizing and Basa

ICL 2900 VME COBDL Taam Laedars ICL 2900 VME COBOL Progremmars ICL Applications Managar

Programmara INTEL 8085 or 8086 Expartisa, all lavals JCL MANAGER axpartisa

MANTIS Progremmere MICHAEL JACKSON Structurad Programming Tachniquas with COBOL

MICRO BASIC Programmars **PASCAL Programmars** PDP RSX IIM or RSTS/E Basic

Programmars SYSTEM X expartise, ell levals TANDEM EXP, all lavels many reqts. UNIVAC 1100 DMS COBOL

Programmers UNIVAC SYS 90 VS9 CDBOL Programmars VAX SYSTEL Programmars

VAX VMS COBOL or FORTRAN **Programmars** VAX VMS DATATRIEVE Analyat/Progs WANG COBDL or BASIC Programmara

Contact: STEVE WHITING, STEVE CASEY, KEITH TAYLOR, PETER HOLLI-DAY, RAY GLEN, CHRIS WHETHERLY MARK ATKINSON, DAVE LONGHURST DEREK WADHAM or SANDRA CAREY

OVERSEAS 0252 516141

Contact: BILL EVANS

SAUDI ARABIA

6 months + assignments ANALYSTS London basad (incidantal business trips to Saudi). Interprat/dafina businass requiraments; davalop inatallation/conversion implications to users. Experience of structured functional aystems analysia, normalisad date-analysia and logical data atructure mathods; top-down structurad daeign methoda.

ANALYST PROGRAMMERS PL1 IMS OB/DC, TSD/SPF or Merk IIII urgantly requirad

6 months + aaalgnmants PROGRAMMERS ANO ANALYSTS UNIVAC 1100, OMS 1100, COBOL urgantly raquirad

MA PORTE

Trident Arms

IBM COBOL OR PL1 with IMS PB/DC, Birminghem UNIVAC 1100 COBDL POP RSX 11/M or RSTS/E BASIC + ICL VMEB COBOL, IDMS or TPMS Contact: NEIL SMITH or

OPERATORS 0252 516141 **BURROUGHS 6800/6900 Data Point Oparators** Deta Entry Ops ICL CME

KAREN LDNGCROFT

HONEYWELL Laval 64 Contact: ALAN PAINE or CHRIS MAGEE

PERMANEN¹ 0252 516141

IBM Systam Programmara, OOS VSE, praf with CIGS, c£12K for Hampshire and Surrey/Suasax HP3000 Analyst/Progs, Berks, c£10K

For further advice on these career movas contact: Patar Jazach for a Immadlata, confidential interview, or write anclosing a datailed c.v.

[t304)

WE CARE FOR OUR CONTRACTORS 2116 COVENTRY ROAD, THE PARADE. SHELDON, HIGH STREET, **BIRMINGHAM B261BR** FRIMLEY; SURREY Tel: 021-742 4431, Telex: 336879

Senior Systems Analyst & **Section Leader** Programmer

Lake District

K SHOEMAKERS LIMITED is a merkel leader in the U.K. Shoe Industry manufacturing and marketing over 4½ million pairs of high quality

fantwear per year.
Our Systems and Computer Services Area currently have two I.C.L. machines: the 2960 and System 10, have two I.C.L. machines: the 2960 and System 10. a Hewlett Packard Laser Printer and a Coms-co Apex plus a number of mini and micro computers. We are seeking to strengthen our Systems and Programming Team as followe:

SENIOR SYSTEMS ANALYST

c. £10,000 p.a. Ideally you must have experience in solving or managing 'business' problems as we expect you to play a significant part in the development of new

SECTION LEADER PROGRAMMER

e. £8,500 p.a.
You should be fully conversant with COBOL and
one other language as you will play a key role in the
development and maintenance of a wide range of

We offer good salaries, prospects for further advancement and excellent contributory Pension/Life Assurance arrangements. The package will also include generous relocation expenses if

Picase write to, or telephone, for an opplication form

Cumbris Telelphone: Kendal (0539) 24343

THAMES VALLEY CHOICE! MAIDENHEAD

SENIOR PROGRAMMER

Medium-shed systems house is offering unique appertunity for immediate promotion. You will lead it to 3 people —enjoy client visits, working with a happy and successful team of analysts and consultants. If you have gined COBOL experience for line Honeywell Level 8 could clinch it for you!) had call for details now.

Ref: CD 4 tf

CONSULTANT £10-13K + bonus + car Key position if you have a systems and programming background plus management, consultancy or seles experience then meet this imperient software house. Today's computer products and methods with lets of recognition is IDEAS and TALENT.

Rei: CS 4

AB EXECUTIVE (Kingston)

01-549 6441

BANKING SPECIALISTS

a Processing Systems Specialists are required for an International access institution with extensive operations in the Middle and For II. They must have 10 years or stere of OP experience in a Banking of months of the Middle of Banking of the Banking of the Middle of the Property of the International reveal of the International reveal of the International reveal of the Arabic, and a second of the International Regulation of the International International State of the International Inter



(01) 661 8080

Apply with c.v. to: Keith Maskell, Tarra Business Systems Ltd., Totra House, 14-10 Terriple End, High Wy-combe, Bucks, HP13 BDR. Tel: (0484) 452001.

COMPUTER **PROGRAMMER**

IMI Titanium, Western Europe's leading manufacturer of titanium and titanium elloyo, has a vacancy for a Computer Programmer in the Systems Devalopment Section of its Weunerlwydd pient naer Swansea. The person appointed will be involved in updating existing computer programs covering wages, stock control, sales and finence applications.

He/she will also be required to work on the development of programs for new Candidetes should have a good general education and 2 or more years programming experience, preferably working on commercial systems in an Industriel environment. Knowledge of Detebus or COBOL would be an

This chellenging position offers an attractive salary, a company pension. scheme end employees profit sharing scheme.

Please telephone or write for an application form to Mr. L.F. Edkine, Plant Personnel Manager, IMI Thenlum, P.O. Box 67,

Waunarlwydd, Swanses SA1 IXD.

Tel: 0792 873471,

HUDDERSFIELD POLYTECHNIC CAD/CAM CENTRE **CAD/CAM MANAGER**

SOFTWARE DEVELOPMENT OFFICER

As pert of the Depertment of Induetry CAD/CAM Awareness Programme, funds have been made evellable from D oil, local industry and the Polytechnic to establish a CAD/CAM Centre within the Depertment of Mechanical and Production Engineering at Huddersfield Polytechnic.

The Centre will have a strong industrial orientation. One of its major purposes is to give industries the opportunity of using and evaluating comprehensive CAO/CAM feelities for their own productive needs.

CAD/CAM Manager ~ PO2 Grade £13,593-£13,884 [eward pending) Softwere Development Menagor - SO2 Grade £8891-£8,528

Sorh poets ere ler e term of two years in the lirst instance, el-though it is enticipated that the success of the centre may permit en extension of this period.

The Meneger will need to be dynamic, heve experience of Computer Aided Design/Menufecture in Engineering end have leadership quelities to establish the success of the Centre. Specific responsibilities will include overell control end menegement of personnel and operational aspects of the Centre, maintaining operational efficiency of the Computer System, lieison with industriel and Academic Users, logather with encouraging new business for the Centre.

The Softwere Development Officer will be primerily responsible for ell sepects of softwere support end development. In addition he/she will be required to support the Manager in the operational dulies of the Centre.

Further detells end application forms (to be returned by 5 November, 1882) from the Personnel Office The Polytechnic Oueensgets, Huddersfield H01 30H. Tel: (0484) 22286, ext. 2224.

VAX COBOL

Looking for a challenge you little R & D freak?

We'll atretch your brain celle further then you ever thought possible, as a member of a email de-velopment team with a brief to think at least s year shead.

Passengers we need like a hole in the head, so first, you really must know your stuff and be conversant with VAX, VMS, COBOL and DBMS (or a similar CODASYL database).

Your job function will be a Programmer Analyst and the end user le a tour operator that's taking the travel industry by etorm. We'll pay you circa £12,000 PA, and send you to The Greek Islands on holiday every year. You also get all the aspirin you cen use and you don't got to wear a watch.

So we don't waete each others time, 'phone first for a chat with John on 01-361 0128.

SALES/MARKETING

Young compeny with O.E.M. Status require Hardware Seleamen with knowledge of Mini Computer Systems to operate in the South West on a

Tel: 09285 51207

UMIST

rith placing according to age and experience, Membership of USS is

CLASSIFIED ADVERTISING USE **DIRECT LINES**

RECRUITMENT CONSULTANCIES (01) 661 8787

The institute wishes to expoint an experienced COBOL Programmer with knowledge at ICL 2904 system software and FILETAB. Initially the appointment will be to a temperary paried at two years, with the possibility of extension. The post is efferted on grade SAO IA on a work 55560-C11105 per snown with placing according to see and SUCCESSFUL

mendatory. Application forms and further particuliers may be obtained by writing to the Registrar, Room 68, UMIST, PO 80x 88, Macchester M60 10D or by telephoning Mr R Oreanheigh, Asalatent Burser (System Osvelopment) on 061-258 3311 Ext. 2628 Please quote relerance B/t20/BC. PROGRAMMER/ **OPERATOR**

ha U.K. office of a farge interme-onal trading campeny requires a regremmer/operator with a flexible porcean to life.

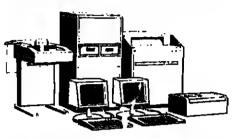
You will have a working knowledge of DEC (1970) COSOL with an un-derstanding of DATABASE-and ON-UNE concepts. Experience of Auto-mated Office as well as the more etral secounting, stock control etc.; applications would be pre-

You will be working yery much. In a user, anyronment with a small learn of computer professionals and you, must therefore be prepared to shere upgrational, training, and other duties sometimes at creating the hours.

Philips Business Systems

Customer **Engineers**

Can your computer engineering experience support our **Business Systems Equipment**



In the field of electronics, few ereas offer such growth opportunities as that of computing. The Service Division is part of Philips Business Systems, the pacesetting group that manufactures and markets one of the widest ranges of advanced business systems and equipment. We are looking in the Greater London and Aberdeen areas for Customer Engineers, male or female, who wish to be part of thal growth.

You should be experienced in lealing with customers' problems. and have been in computer engineering for al least 4 years. laving gained an understanding of distributive data processing and have experience of dealing with disc operated systems. We will provide you with the appropriate. product framing necessary to

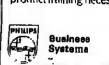
challenges offered by our range of Business Systems Equipment.

meet the technically exciting

The excellent salary you will receive will reflect the importance we attach to these key positions. There is also group discount on Philips' products and other benefits associated with a large company. Naturally, a company vehicle will be provided.

If you believe you have the

ability/axperience needed to work on our Business Systems Equipment, then why not telephone Henk Riethoff. Senior Personnel Officer, on Colchester 575115 or write to him at Philips Business Systems, Service Division. Elektra House, Berghott Road, Colchester, Essex CO4 5BE.



PHILIPS

Freelancers . . .

. in the North of England and Scotland who are available now or in the near future are invited to contact me, Peter Moore, to discuss a variety of interesting and rewarding assignments throughout the

P-E Computer Services Limited Ninchesier House, Fountain Street, Manchestar M2 2EF. Telephones 061-22@2776

Software

are setting up an Atari Program Exchange Operation - APX in the UK. APX acquires and distributes programmes written for the Atari 400 and Atari 800 home computers by a wide variety of people – from professional software. vendors to hobbylsts. Its alm is to increase the usefulness of Atan home computers by offering an extensive library of programmes appealing to users of various ages and with differing needs and interests. To support this programme we need the following people:

Software Manager - responsible for evaluating submitted programmes both technically and from a marketability viewpoint. Technical skill must go hand in hand with an in depth knowledge of the micro computer world and its associated software and must be allied to a keen awareness of market needs.

Production Manager - will be responsible for the production and replication of accepted programmes as well as controlling their sales and distribution. Experience of small batch production of tapes and diskettes is essential. The successful candidate will be able to demonstrate good organisational and management skills end will almost certainly be a micro enthusiast.

The benefits package will include good negotlable salaries company cars and an attractive range of fringe benefits. Please write with full personal and

Dayki Komatti, Atari Infernational (LIK) Inc. 185 Ealing Road, Alpanton, Wegholey, Middlesex, HAO 40ti.

ansdowne

osk House. 207 The Valo. London W37QB.)1-743 6321 (24 hr answering service)

iere ore the latest vacancies that can be cessed through The Lanadowne nointments Regieter. All are open to both en and wamen and we have many other pportunities in related fields with nies large and small.

ANALY OT/PROGRAMMER E18.000 COBOL, CICS, 1DMS, CMS, DOS, VSE

Dne yayı mıntmum PLI At loast 2 years CICS. A REGIL & COBOL

Bystems analyst Harte/Esses

SYSTEMO PROGRAMMERS

PROGRAMMER/ANALYST

APPLICATION OPPOGRAMMER

PROGRAMMERS FORTRAN, Technical/Scientific La

TECHNICAL TEAM LEADER Type & Wee

OPERATIONS ANALYST With IBM SOFTWARE DESIGNERS

following ICL. PLJ, BAL, MVS. E.C.London SOFTWARE ENGINEERS |Real-lime)

063Y [] SOFTWARE ENGINEER 0879 C

PDPII. R5XII of MACRO with CORAL

To be considered for these opportunities just lick

..._ CW2V10

SERVICE OPERATIONS MANAGER

Benson, Europe's lergest menufecturer of computar-controlled drefting equipment ere seeking en experienced maneger to teke operelional control of the field service team.

This newly-created position, based at the Bristol head office, results from our sustained growth, and should appeal to a mature, technically able person, cepable of motivating their team and meinteining the excellence of Benson's service record.

Attrective selery end benefits package.

Applications in writing, enclosing c.v., should be sent to

Clive M. Hughes, U.K. Service Menager, Benson Electronics Ltd., Techno House, Redcliffe Wsy, Brietol BS1 6NH.

Denson The Computer Drefting Professionels

Ferranti Computer Systems Ital.

Software Engineers

Ferrenti Computer Systems Limited, one of the lesdere in high technology, is expending its softwere function et its Brecknell end Coshem, Portemouth esta blishments, to meet the chellenge of

severel new military applications contracts.
We are looking for individuals with 3 years-plue experience in one or more of our epplication erees. Opportunitles for edvencement ere good, se laries end benefite ere commensurate with those expected from en established compeny. Our spectrum

of work covers: Multicomputer Systems Fire Control Systems Simulators/Treiners Nevigetion Systeme Reder Deta Processing Mini and Microprocessors

MASCOT Softwere Methodology

If your experience to dete is relevent in these erees end you would like to extend your expertise please telephone our Recruitment Office on Brecknell 3232, ext. 3471, or write quoting reference B594/CW for Brecknell end P590/CW for Portsmouth,

Recruitment Office
FERRANTI COMPUTER SYSTEMS LIMITED Weetern Road, Breckneil, Berke, RG12 1RA

Open to mele end female applicants

FERRANTI Selling technology

A major bank require a project leader end prommers with a sound date communications ackground in some of the following areas:

— DEC PDP 11 ueing RSX 11

The company offer a very attractive aclary and benefits package, including reduced rete mortgagas end loana.

COMMUNICATIONS

A leading communications company is looking for sanior and principal softwere engineers with a good real time background to work on the very latest developments in communications technology. Applicants should be of degree lavel, with a minimum of 2-4 years' experience in communicetions controle or date communications. Genarous aslary end an exceptional relocation

Our client la involved in the development of defence communications systems. They currantly wish to employ an engineer with a back-ground in radio communications. Experience in defence strategic communications, including message hendling, would be a great advantage. TM42/3

COMMUNICATIONS

HERTFORDSHIRE Our client is at the forefront of microprocessor based communications systems. To expand their existing teem they have a requirement for engineers with a minimum of threa yeers' real tims eystem development experience, ualng high level languages and ISM, PDP 11, VAX or

GRAPHICS

WEST COUNTRY A London-based ayatems house is currently seaking scientific programmers to work on site in the West Country for a minimum of two years. Candidates should have experience of Fortran on VAX machinea and an interest in graphica-

ypa applications, In addition, programmers with PDP-11, Fortran, Baalc and Pescal, ara required for enginaaring Systems. DLM42/5

SYSTEMS SOFTWARE

Our client has an established software factory where existing developments in systems soft-were require additional personnel from Senior Programmers to Project Menagers.

Candidates ahould have a strong Computer Science background, plus exparience in one or more of Compilers, Utilities end/or Software Products.

Candidates ahould have a strong Computer Science background, plus exparience in one or more of Compilers, Utilities end/or Software DLM42/6

BANKING COMMUNICATIONS

An internstional organisation specializing in banking networks is interested in recruiting additional support programmers. Candidatee ehould have expariance of benking epplicationa, a technical background, end experience in programming in BASIC.

Based on PDP 11, succeeaful candidatea will ba-involved pre- and poat-eales support on cus-tomer sites. DLM42/7

TYPESETTING/GRAPHICS

A very successful compeny (recently gone public) specializing in Typesetting and Graphics Terminals, wish to expand their programming development unit. Candidetes should have a degree plua two yeers' eoftware/scientific programming experience on minis or micros in eny modern language. DLM42/8

The state of the s

COMMAND & CONTROL

LONDON One of the largest International Software houses with their hesdquerters in London hevs s requirement for Software Designare with a minimum of 1 yeer's experience in Rasi Time Systema Design, cendidatea ahould have a dagree plue experience in one or more of the fol-

- Defence Systema - Maacot -VAX -INTEL 8086 DLM42/9

HARDWARE DESIGN ENGINEERS BEDFORDSHIRE

A company committed to etata-of-the-art satal-lits communications systems require additional enginears for development of digital eigne

Candidates must have a degree plus three years' experience in one of the following: 8086 hardwere design, digital logic design, digital communication equipment and interface design.

HARDWARE ENGINEERS **ESSEX**

Our client la involved in a wide range of hardwere development uaing atete-of-the-srt microprocessore. Candidates ahould have exmicroprocessore. Candidates about his assessment of the following: determined in the following in the handling hardwere, IF/VHF circuits, complex microweve circuits, Redar transmitter dasign, and analogue and digital control systems.

DLM42/11

HARDWARE ENGINEERS

A number of openings exist for Senior and Principal Engineera to carry out design and da-valopment in the following arees: analogus end digital subsystems, speech coding, digital filter-ing, epeach recognition, and telephons ex-

Candidates must have a degree, plus at lass

TECHNICAL WRITERS SCANDINAVIA

Our client, a growing computer manufecturar, is seeking candidates for technical euthor/co-ordinstor positions.

Cendidates should have a technical beckground including technical writing and must be able to communicate in English both written and varbel. The work involves micro processors, data communications, and local network.

DLM42/13 munications, end local network.

SOFTWARE ENGINEERS SWITZERLAND

A mejor talecomms company saek edditional programmers to work on atate-of-ths-ert

switching ayeteme.
Candidates should have a degree, be in their Candidates should have a degree, be in their twenties and have experience in some of the following: real-time multi micro processor operating systems, comms. devices, HDLC, high level languages, e.g. Chill, Pascal, SPC switching systems, call handling experience, CCITT recommendations, System 12/40 and System X.

DLM42/14

All the above appointments involve parmenent positions and cerry a wida range of saisty and conditions described and experience. conditions dependent on location end expsi-lence. In the first instance please send us a copy of your CV (alternetively telephone for an epplication form) so we may discuss your application In confidence with our client on your behalf.

APRIL Advertising 5 Brighton Road Surbiton Surrey KT6 5LX.

W HERE IS THIS RECESSION? E HAVEN'T NOTICED IT.

We're the market leaders in the fastest growing business sector in the U.K. with a dramatic expansion record since our founding in 1965 to give us a tumover of £100 million plus this year.

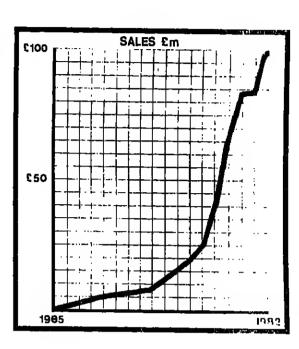
The Data Processing Department, currently operating two IBM System 3 Model 15D's has played a fundamental role in every major area of Company activity expanding programming team. and current development plans include the introduction of a Remote Telecommuni- with other large Company benefits and if you cation Network, a Transport Scheduling system and new Stock Control systems plus major revisions to our current Data Processing Operation, based on new,

So, now we are recruiting

RPG II Programmers

to make a positive and effective contribution to our development plans. Successful candidates will have a solid background in RPG II and will be able to demonstrate the ability and responsibility to progress to senior positions within an active and

If you want to earn a generous salary enjoy hard work in a secure and challenging environment, then write with career details to: Chris Chaplin, Data Processing Manager, **EVEREST DOUBLE GLAZING. Everest** extremely powerful WANG VS100 hardware. House, Cuffley, Potters Bar, Heits EN6-ISG. or telephone Hatfield 63535.





Everest-The Best Name In Double Glazing

STOP WISHING

Stop wishing and consider. The single most important reason for joining Irex is that you, the contract professional, retain all of your negotiated fee.



selection process means that only perfectly suitable contracts are offered to you. And because such a vast number of potential employers have come to recognise the value of this alternative time saving and progressive system, Irex are able to offer their selection of contracts, direct to you, from a very superior

Your fee, paid to you direct, has no agency deductions, and better still, you select and negotiate your own contract terms.

The Irex system is a plus for you, and your prospective employer.



You have nothing to pay, nothing to lose, a great deal to gain.

Stop Wishing - for your Free membership and further details of the benefits of belonging to Irex -Call Sally Bradley or John Edwarde NOW on 01-261 1543. Become part of The Contracts Business for business minded contract professionals.

Ideas and Resource Exchange Limited, Snow House. 103 Southwark Street, London SEI OJF, England. Telex: 296864 IREXUK G

NEW MULTI-MINI PROJECT IN COLOUR

Our Client is a leading commercial organisation, part of a large British group of companies, based in Central London. They are developing sophisticated new on-line applications to run on 4 loosely linked Honeywell DPS6 model 76 minis, with 15 256 mb disc drives, 4 printers, 4 tape drives and up to 100 TDS colour terminels. The system hes been designed around a comprehensive underwriting, claims and accounts system. They now need the following edditional computer professionals to further develop and install the systems.

SENIOR PROGRAMMERS TO £9.500 + BENEFITS

For the Senior Progremmer positions cendidetes should have e sound DP background to include e good working knowledge of Honeywell DPS/LEVEL 6 using COBOL and/or SCREENWRITE.

The progremming positions are open to cendidetes with 18 months' + experience, some of which should have been geined on a Honeywell DPS/LEVEL 6 mechine.

Specific knowledge of insurance or on-line applications will be edvantegeous.

The client has now reached a critical stege in the project and is dedicated to recruit the right individuels to join e young end

To find out more ebout these excellent cereer opportunities please contact Mike Hermer.

APEX COMPUTER RECRUITMENT LTD

PROGRAMMERS TO £8.500 + BENEFITS

- ★ MORTGAGE SUBSIDY
- (efter quelifying period)
 TRAVEL SUBSIDY
- * PENSION AND MEDICAL SCHEME
- (efter quelifying period)
 ★ INSURANCE DISCOUNT
- ★ MEAL ALLOWANCE
- **★** FLEXITIME
- (besed on 33-hour week)
- * SPORTS AND SOCIAL CLUB

Rue Gottl do Gamon Uccio 1080 Brussels Tsl. 010 322 377 48 13

COBOL/PL1/OS/CICS/IMS

ICL/VMEB or K/IDMS

IBM/ICL/HP/COBOL

HONEYWELL 64/66

SNR OPERATOR

Commercial

LEADING ROLES IN SOFTWARE & CONSULTANCY

to £15,000 - Maidenhead

As one of the foremost computer systemocompanies in the UK we are now oble to offer more rewarding and chellenging cereer opportunities to the following

Project Manager/Principal Consultant

To be responsible for project team.

Work will Involve

- ★ Support, maintenance, installation and user-training for the current Petlant
- Admin System.

 **Specification, Development and Implementation of anhencements to this eystem or new systems as required. Occosional trips to Rlyodh.
- * At least 2 years project leadership experience, preferably in a Softwaro House
- ★ A sound technical background in interactive business/edministrative applica-
- ★ A good knowledge of COSOL

 ★ A good knowledge of COSOL

 ★ It would also be useful if you are familiar with Perkin-Elmor 32-bit microcomputers_end_heve experience in Hospital Administrative or Tachnical opplice-

Senior Consultant Commercial Projects

We are looking for a professional with about 8 years D.P. sxparisnes coupled with same accountancy experience (perhaps part qualitied). You'll be working on domanding commercial projects. Rat: LTS

For both positions saleries and benefits are whot you would expect trom a successful end rapidly growing campany. To find out more places contact:

Patricls Mole, Porsonnel Officer, Lessoo Softwars Limited 156/152 Sath Rood, Maldenhead, Berks St. 84D. Tolephono (0528) 23391

with the second of the second

your appointments register. **Systems Analysts Programmers** NCR to £14K NCR/IBM/COBOL

to £12K Online, Indust. Fin. Prod. Control - Barks. nsurance · Canking - London · H Counties · N Eng to £16K to £13K CAD/CAM Reel time · Modelling - Men · Essex Cammerciel - H Countles · Midlands · Manchaster to £14K IBM/HONEYWELL Commarcisi - H. Countles, Midlands Commercial Manu - H Counties · Midlands · Men

IBM SYSTEM 34/38 RPG **Software Engineers** Londan · H Counties

to £12K FERRANTI/ARGUS DEC/HP/WANG/DG Carks · Surrey

Basic · Cobol - Berks · Surrey WINCHESTER DISC DRIVES to £12K Analyst/Programmers Control · Systams - H Countles

MILITARY SYSTEMS/RADAR to £11K Corel Maccot - Surrey - Eesex - S West Commercial - West London · Surrey

to £13K PDP/VAX/INTEL Telacome · ATE - Surrey · London

IBM/UNIVAC/ASSEMBLER to £12K Senior Appointments Online · Oetebase - Surrey

Surrey

PRINCIPAL CONSULTANT Commercial Accountancy. O.G. - Barks. Hardware/Support to £25K SALES EXECUTIVES CAD/CAM/GRAPHICS to £15K Micros · Minis · Peripharais · etc - Netionwida Technical Support - H Countles to £18K

CONSULTANTS

Commercial · Genking ~ Berks · London

You can be eure of heering about many opportunities like these, U.K. and abroad, when you make Sloengete your first choice. Take the next step in your cereer with usi

telephone 01 549 9236

KINGSTON-UPON-THAMES

In return for your IBM System 34 and RPG II know how...



MODIANO

City of London-beeed, G. Modiano Limited are the country's

lergest privataly ownad wool £25,000,000 pa lumover generated by a 30-strong

An ever increasing workload now prompts tham to set up a new wool pricing system using an IBM S/34 end RPGII. A sophisticated real-time DP project that neads en equally sophisticeled

ANALYST/PROGRAMMER

to take full responsibity for it is luding the establishment of e healthy rapport with senior numagement, a vitel aspect et this embrydnic stage. So you must heve gained at least 4 yaers' experience in the

Analyst/Programmar rola with the abova know-how, e good acedamic background plus the ability to werrent the high degrea of operationa freedom thet this new post afforda. Starting salery is In the range of £10,000 to

£12,000 which is totally in line with the chellanges in store when combined with the ganerous benefits peckaga taggad on. Please contact our advising consultent Bruce Hemington

et Compuvac Personnel Sarvices Limited, Compuvac House, 121 City Road, London EC1.

RECRUITMENT CONSULTANTS

CONTRACTS

We urgently require skilled and experienced analysts and programmers. Below are examples of contracts starting shortly. If you are on contract or are seriously considering taking up contract work forwerd a c.v. or contact Jackie Robbins today.

★ ВМ

Anaiysts

Unit Linked

Life Assurance Analyst/ **Programmers** Assembler Analyst/Programmers SYS 34/RPGII Programmers CICS/COBOL Programmers

DL1/COBOL Programmers CICS/DL1 Programmer MARK IV/DL1 Programmer PL1

★ B6800-6900

Analyst/ Programmer

COBOL

We are also interested in hearing from people with either CICS/COBOL, IMS/COBOL, DL/1, PL/1, MARK IV, or

computer services

8 Mint Walk Croydon 01-680 3761 。 《大學》(1985年)(1985年)(1985年)(1986年)(1986年)(1986年)(1986年)(1986年)(1986年)(1986年)(1986年)(1986年)(1986年)(1986年)(1986年)

Lomputer Professionals 4. KENDRICK MEWS, LONDON SW7 3HG TEL: 584 8790

Business Analyst/Project Manager Berks £12,000 - £15,000

A wall-satablished international organisation is about to develop a major naw system and wishes to appoint a 'kay' parson to contribute to the deeign and undertaka project menegement responsibilities.

For this tesk the individual must have a sound business background in retelling or distribution/warehousing and proven project management akilis. Technical knowledge of installing database solutions would be a definite

This position offers the opportunity to work on a system for world-wide use and provides ecope for future oversees travel. Excellent career prospects are complemented by attractive company banefits including relocation easistence.

Ref: 2110/A

Senior Systems Designer Herts Up to £11,750 + Benefits

Due to expension this company, which is part of a major finencial group, is seaking a Sanior Systems Designar to join an existing team working within the area of distributed processing.

Candidates should possess a good programming bass and a minimum of two years analysis experience gained in a commercial or financial anvironment. Specific hardware experience is not required but knowledge distributed processing would be adventageous.

A first-class banefits package includes mortgage subsidy, non-contributory panalon, subsidiased restaurant etc. Assistance with relocation if necessary is

NCR Banking Specialists Bucks £9,000 - £12,000

A rapidly growing systems house now developing specialist banking applications requires savaral high-calibre personnal with NCR experience to help form a new taam.

Knowledge of COBOL with TOTAL and TRANSPRO on the 6000 (Ideally 8500)

Our ctiant offers exceltant career prospects and an outsign ding benefits package including relocation, free BUPA, company car or allowence, 41/2-5 wasks holiday and a low contribution panalon schame.

or further information, write to Computer Professionals quoting the advertisement's reference; alternatively phone Isobel Broce or David Futcher on 01 584 8790.

可能的是一个基础的,并且是一个企业,是一个企业的企业的,但是一个企业的企业的企业,但是一个企业的企业,但是一个企业的企业,但是一个企业的企业,但是一个企业的企业,但是一个企业的企业,但是一个企业的企业,但是一个企业的企业,但是一个企业的企业,但是一个企业的企业,但是一个企业的企业,但是一个企业的企业,但是一个企业的企业,但是一个企业的企业,但是一个企业的企业,但是

CP Computer Professionals look after the professionals.

بنلتح الكويت الهتدد الحدود

THE UNITED BANK OF KUWAIT LTD. PROGRAMMER/ANALYST

LONDON

United Benk of Kuwait has been a dedicated Dac user for several yeers. The bank is currently upgrading from twin PDP 11/70s to VAX 11/780, the conversion to be complete in early 1983. The position will be based at the bank's head office in tha City at Lombard Street.

The successful candidate should have a solid programming background within a Dec environment to include et least 6 months' VAX 11/780 with MACRO 32. The bank's current 11/70 systems run under RSX 11M but the new VAX 11/780 will be installed with VMS (MACRO 32). Applicants should be educated to a minimum of 'A' new VAX 11/780 will be installed with VMS (MACRO 32). new VAA 17700 will be installed with Vivio (MACRO 32). Applicants should be educated to a minimum of A level and be good communicators but more importantly should have the ability and drive to join e small teem of enthusiastic programmer/analysts working in a stimulating environment. Previous benking experience is not essentiel.

United Bank of Kuwait consider this a crucial appointment and are prepared to reward accordingly.

To find out more about this excellent career opportunity please contact SEAN ORSLER on 01-404 4821

APEX COMPUTER RECRUITMENT LIMITED

Rue Gatti de Gemond Uccle 1080 Brussels Tel. 010 322 377 4913

-DALROTH computer personnel

Our client, e world leader in Data Management/Dictionary driven software, with 19 overseas and two UK offices and a number of international egency egreaments, have recently re-organised and expanded their R & D Development Unit to provide the structure and rasource raquired to embark upon significant further development culminating in seven new products.

The Company have twin CPU's at the R & D Development Unit, operate OS and DOS end have a number of micros end other sophisticated davelopment aids and tools.

The positions offer a unique opportunity to join e growing intarnationel compeny at the planning phese of e number of new davelopments end for the senior positions the possibility of some international travel for user conferences/presentations.

> LONDON BASED £8-14,000

SENIOR DESIGNERS and DESIGNERS

For all positions previous dasign experience in either an applications or software products/tools environment is essential end praferebly previous programming experience ideally using IBM Assembler (other experience may be considered).

For the Senior Designer positiona applicants must be familier with an IBM OS or DOS environment and have been in DP for at least seven years.

SEMIOR PROGRAMMERS/TEAM LEADERS PROGRAMMERS

For all positions at least one year's IBM Assembler experience is assential.

For the Senior Programmars/Team Leaders a minimum of five yaars' experience, with at least two years' using IBM Assembler. The ability to interprat specifications, schedule work and support and develop junior staff is also essential.

SOFTWARE SUPPORT SPECIALISTS

IBM Assembler experience is essential combined with a good working knowledge of OS and/or DOS environments.

Reaponsible for the resolution of all problems encountered by the users of our client's software producta, applicants must demonstrate previous experience in a problam activing role together with the character and confidence to tackle new ereas. This experiance may have been gained either in an applications or systams software environment.

For further details please contact Jenny Dalrymple-Hay or lan Murray West (day) 01-493 2947 or (evenings/weekends) respectively Beaconsfield (04946) 4579, Milton Keynes (0908) 563415, quoting ref. 9934.

DALROTH & PARTINERS LTD . 4 HALF MOON STREET . LONDON W1

SALES **CAREERS**

McCourt Cousins Ltd. would like to talk to successful Salesmen who are interested in exploring alternative career opportunities.

In a rapidly changing industry it is not always possible to keep abreast of current circumstances Not only do new companies generate new requirements, but existing organisations change in their marketing philosophies, in their senior management and in their product ranges.

In such a volatile environment nobody is aware of all the opportunities. However our sales division spends every working day obtaining and assessing salee and sales management opportunities. The vast majority of these positions are never advertised.

If you feel that you could usefully spend some time discussing your sales career in the context of current opportunities telephone Kevin McCourt or write enclosing a full curriculum vitae.



Tel: Readina (0734) 595346

There is an easier way out.

rogrammer

Analyst Programmer

Allalyst Programmer

City

RARE CHANCE TO MOVE TO PROJECTLEADER ROLE! Major organisation
heavily lovolved in sophisticated systems development seeks competent person to lead
project (sam. Ideally suit programmer/
analyst with good DEC PDP11 BASIC +/
RSTSE experience in a financial/commercial
area, who has already worked in a supervileadership/management qualities. Ref. 8334

IBM Programment

IBM Programmers £10,000+
Move into anelysis! W. London
NEW PROJECT DEVELOPMENTI Major
international conglomerate see currently site of PROJECT DEVELOPMENTI Major international conglomerate are currently establishing new team of programmers and analyst/programmers for exciting new projects! Positions exist for persona with varying texts of IBM COBOL programming experience including CICS, DLJ and VSAM (preferably utilising structured techniques). Promers wishing to move into an analysis mie will be given every opportunity to do sol Ref. 1526



PL/I Programmers To £12,000 Learn CICS & DL/I

MASSIVE LONG TERM DE-VELOPMENT PROJECT underway with major City resources organisation! First-class opportunities exist here for experienced PL/I programmers (18 months — 3 years +) to work on latest 18M hardware. Installation supports CICS and DL/I (FOR WHICH FULL TRAINING GIVEN WHERE MECESSARY) running under MVS. Riog now for more details! Ref. 8409

Honeywell To £10,000

ATTENTION HONEYWELL PRO-GRAMMERS: Two companies, based in central London, urgently require D.P. Pro-fessionals for their expanding installations which include the latest DPS equipment. We'd like to hear from EVERYBODY with solid Cobol and/or Screenwrite experience in a fast moving commercial environment. TPS and database an advantage. Excellent oppor-tunities and attractive allowances will be offered to successful candidates. RINO NOW FOR FURTHER DETAILS!





ANALYST **PROGRAMMERS**

to £10,500

Easams, one of Europe's leading systems design company's, is looking for Analysts/Programmers to support teams on recently acquired projects. The positions will auit graduates with at least two years' experience in Real Time programming either using Macro II or Fortran in RSX or RMS 11K, on DEC bardware, or using Basic or Pascal on HP desk top calculators. Involvement in mathematical modelling would be an advantage for defence applications whilst knowledge of telecommunications projects would be useful for commercial applications. Essams offer a stable career in a thriving department and as part of the OEC organisation an excellent salary and benefits package la svailable

LOCATION: SURREY

REAL TIME

SOFTWARE **ENGINEERS**

to £12,000

Real Time Developments are a successful software house with a commitment to providing quality acftware services. Increased business has created a requirement for highly motivated and adaptable Software Engineers, educated to degree level and prepared to travel to clients premises when necessary. Likely candidates should have gained their experience in any mini/micro-computer environment using high level and Assembler languages. A knowledge of either Real Time Software, Data Communications or Industrial Automation applications will be advantageous, in addition to an excellent salary there are a range of benefits, including relocation, normally associated with a thriving and successful company.

LOCATION: HAMPSHIRE

PROGRAMMERS ANALYST **PROGRAMMERS**

£ EXCELLENT

Ravensbourne Registration Services Ltd., a subsidiary of a junding merchant bank provides specialised computer based financial and administrative services to many British organisations. Hardware has been upgraded to an ICL 6946 and expansion compled with the company's increased D.P. commitment has created a requirement for Programmers and Analyst/Programmers, It is likely that Programmers will have at least one year's Cobol experience. preferably on an ICL machine. Analyst/Programmers should have spent at least three years' in a development environment and be able to design and implement systems from feesibility. In addition to salary there are a range of benefits normally associated with a large financial

LOCATION: BECKENHAM



TECHNICAL SUPPORT PROGRAMMER

o £8,500

TECHNICAL

ANALYSTS

to &12,000

CPC, a major manufacturer of quality foods producing household names such as Knorr, Mazola and Hallmanns are seeking to expand with the addition of a Technical Support Programmer. Current hardware is an IBM 4331 and likely candidates will have a DOS/VSE operations background and be familiar with IBM, JCL, VSAM and Assembler. Experience should have been gained in a TP snvironment utilising either SHADOW or CICS. The successful candidate will also bave an opportunity to train on an IBM System 38. In addition to salary there are a wide range of benefits including discount on goods. subsidised restaurant and active sports and social olub.

LOCATION: SURREY

A leading worldwide shipping company has agreed a strategy

JA306/8

JA308/6

JA806/6

placing them et the forefront of autometed offine technology. The technical support teem have responsibility for analysing the requirements for hardware end softwere development, data communications, operations support end data administration. A commitment to planned expansion has created a requirement for Analysts with a minimum of two years experience in a Hewlett Packard or Tandem environment. Applicante will have planned, implemented and installed systems to recognised standards and procedures. Database and data dictionary analytical skills would be advantageous. Our clients offer excellent working conditions

LOCATION: LONDON.

Corporation, are the current world leaders in the Access Control Industry. To meet expanding business they require an additional

Programmer to work on existing packages, dustomising them to

Oardkey Systems, a part of Fairchild Industries and V.S.I.

Cardkey

PROGRAMMER

to £11,000

clients individual requirements. In addition to holding a full driving licence, candidates should have a minimum of one years! programming experience in a real time environment using Macro II and Assembler on PDPII Hardware. In addition to salary and usual large company censiles, including free BUPA, there will be an opportunity for occessional travel to Europs. LOCATION: BERKSHIRH

Action ..

ting or send the coupon to D.P. Recroitment ltd. Freepost, London W5 2ST 01-867 5601

Name Addrese

A STATE OF THE STA Systems & Programming,

Comcap Resources Ltd was launched 12 months ago to provide the most comprehensive D.P. recruitment service available.

Our results, by any standards have been exceptional. In our first full trading year we have acted on behalf of numerous Blue Chip companies in the U.K. and as a direct result have many satisfied applicants.

The signs for the next 12 months indicate that we will experience a further period of exceptional growth.

Whatever your position in the Data Processing industry, whether you are a contractor or looking for a new permanent position, it makes sense to talk with the U.K.'s most rapidly expanding professional recruitment agency - today!

Ring Mike or Sue

Major international bank currently require operators with at least 2 years IBM MVS JES 2 experience. Knowledge of TSO: JCL would be an advantage at this 3 shift installation. Ref 061P

Our client, a major Honeywell 66/DPS installation, offers outstanding operator training. Applicants will have at least one years L66 GCOS experience. Currently a 3 shift system is

If your are looking for your first career move and have 3 years IBM, DOS VSE CICS experience, our client would like to meet you. The position will offer the opportunity to liaise closely with users, and become involved with business systems, and analysis. Days only Ref060P

You will have an extensive knowledge of Dala General mainframes, in particular a thorough understanding of the D.G. AOS operating system. Previous experience of on-line, and communications would be a distinct advantage. Days only Ref 059P

In addition to a thorough understanding of large Data General Mainframes, yo will have experience of micros and their applications, Ref059P

Permanent

Ring Joe Haynes

Technical Support Manager, City. £10K.

A major software House using an IBM 4300 is looking for an ambitioua Technicel Support Manager for this City office. Candidetes should have a minimum of 5 years IBM

> IBM Systems Programmers, City & West End. £10-£12K. Preferebly with DOS/VSE experience and at least two years programming.

IBM CICS Assembler Programmers, North Hants. £Vory high - negotiable. Leading Europeen Systems Consultancy, wants good techniciens preferebly with Networking experience. Rewards are very high and based upon individuels performance.

PL1 Programmers, Various locations. £9K+ We have numerous requirements for Progremmers in large multi meln freme installetions.

System 34 RPGII Programmors, North London & Surrey. Circa £10K. Both Installetions will be moving to System 38 within 12 months. Smell teams, great opportunities.

Now WAR 1://Bu histallation, West Landon. Systems Programmer. £10-£12K. Analysts and Programmers. £10-£12K. Within easy access to M3 and Thames Valley this is a major new installetion using RMS and VISTA. Excellent opportunities for good VAX experience.

IBM OS COBOL

Analyets - Banking Exportence, South Coast, Circa £15K. Malor IBM installationa, offering real career prospects in a superb location.

Sales

Our client is a rapidly expanding consultancy. Applicants should have a software background, and Ideally D.P. sales support experience. The basic salsry is £7.5K, with on-quota eamings in year one of £11+K. Naturally, a car is supplied, and you will be besed in

Systems & Programming, Contract Ring Mike Bettle

Contracting with Comcep Resources will guarentee you the highest rates. Professionel advice regarding taxation and other matters is readily available. Our current contract requirements are being constently updated, so before your next contract you must contact Mike Bettle.

IBM OS MJ/COBOL IBM OS/VS1 MVS VTAM VSPC IBM OS/VS1 IMS DB/DC MKIV ADF IBM DOS/VS COBOL SHADOW IBM DOS/VSE COBOL CICS DLI IBM MVS PLI IBM MVS IMS DBPLI IBM SYSTEM 34 RPGII **IBM 8100 DPPX IBM 8100 DPCX** IBM Series I COBOL ADABAS/NATURAL VAX 11780 COBOL MICROSOFT BASIC CPM/MPM

Programmera Progremmers System Progremmers **Analyst Progremmers** Progremmers Programmers Progremmers **Programmers** Programmers

Do. Programmers Programmera **Progremmers Programmers** Programmera insurance Analyst

An outstanding career opportunity has arisen with our client. They are currently looking for an outstanding operations analyst. Your extensive operations background will have equipped you with a good understanding of MVS JES2, CICS, VSAM, VM/CMS, TSO. his vacancy offers the opportunity to be an important member of the development team, responsible for implementing systems. A ortain aniount of U.K. travel is involved. Suitable qualified should ring Mike Mannion on 01-723 4053.



Working overseas on a long or short term basis can be a very good life if you work with the right company. A company which appreciates the very best talent in the U.K. and will reward successful candidates with the highest salaries and benefits. However, there are disadvantages and our Overseas division is fully aware of the pit falls and problems that can arise. You can be certain that our consultants will advise and look after you.

If you want to discuss the fabulous opportunities listed below or working overseas generally. Call now.

audi Arabia Ring Chris or Caroline

One of the world's leading International Companies is urgently looking to recruit;

Usioms Designers. To £22K. Systems Designers will need at least 5 years systems analysis experience in a large IBM installation. A Mark IV programming background will be an important further recommendation. Preference will be given to those familiar with forecas modelling and statistical analysis. The emphasis of the

role is on new systems - Their feasibility, design, implementation and support. Natural liaison skills will facilitate success in all these areas.

en die Die ausgerannen kommen. Wes Site ist Bath.

Systems Programmers should have at least 3 years pure software systems experience in one or more of the following areas: DATA COMMUNICATIONS (NCP. VTAM, MSNF), GENERAL PURPOSE SOFTWARE (PL/1, FORTRAN MARKIV), OPERATING SYSTEMS (MVS, JES2/3, VM/370).

> Operations Analysts with at least 5 years experience on large IBM installations in some of the following areas: JCL (datalogu procedures, job flow control), SOFTWARE MONITORING SYSTEMS (data reduction and graphic presentation). DATA SECURITY (RACF or ACF/2), TSO, MVS, IMS, change control or

Shift Leaders with at least 4 years experience in a large IBM installation (preferably 3033s) with special emphasis on MVS. TSQ 2/3, JCL and ultilities NETWORK OPERATORS with in-depth data communications experience in a medium to large IBM. installation (preferably 3705s using MVS and VTAM)

A background of at least 5 years experience in computer programming, computer science, specialising in installation and mainteriance of IMS products is needed. General skills should include IMS_DB-DC, MVS and ASSEMBLER_ADF would be an added advantage to applicants interested in this position. Please contact our office for details of this and other positions in Holland

COMCAP RESOURCES LTD, 26 Chilworth Street, London W2 6DT.

Group offices: London - Rome - Stockholm - Milan - Frankturt - Zurich

Comcap Overseaa, a highly successful division of the Comcap group, boast without question that we can offer you the highest contract rates possible for overseas assignments. Our Consultants pride themselves in offering you a personal and professional service which is second to none. We are currently looking for the following experienced

UK Based with Business Trips Abroad

Systems Analysa.
This interesting position will involve the in-4 years experience using PL/1, house Interpretation and definition of business requirements and the development If your experience matches our of Inatallation and conversion procedures to requirements or if you have any doubt users. A background in structured systems thet we cannot offer you the best deal enelysis, documentation, design and Data atructure methods is essential. for overseas assignments, ring usl

Contracts

Ring Chris or Caroline

Saudi Arabia Analyst Programmers experienced using PL/1, IMS and OS/JCL

Ring Chris or Caroline To £2011 + Family Status Our client, who is based on the Mediterranean Sea la one

Morth Africa

of Africas leading oll producers. They are now urgently looking to recruit Senior Analyst Programmers with at least 5 years experience eligned with e sound knowladge of COBOL (preferably DOS/VS, POWER and CICS).

The successful candidates will be offered indefinite term amployment and a benefits package which includes free bounded and family status. housing end family status.

with a minimum of

OS/MVS, TSO/SPF and ADF.

Remember:

competence

Send your

details

now!

Comcap means

with capability:-

To: Comcap Resources Ltd, 26 Chilworth Street, London W2 6DT. Tel No Work i am interested in the following: U.K. Systems & Programming U.K. Operations Contract Permanent

Overseas Job Title

Brief experience.

telephone 01-637 9611

Principal Rechnical Support Consultants
- Europe and UK

Digital Research is the world's leader in the development and supply of operating systems and lenguages for the micro-

We ere establishing a European HQ to develop and support our already extensive customer base of computer manufacturers, applications, developers and distributors.

At the heart of this operation will be the support team and we now wish to talk to a number of key individuals ebout joining us in setting the standards for this feat moving high growth industry.

Your qualifications will be of the highest cellbre. You will have a thorough underetanding of operating ayateme end lenguage compilere.

More importantly you should have the ability to present complex ideas with clarity end euthority, communicating effectively in negotietions and consultations at all levels within client compenies.

The rewards ere excellent and consist of a basic selery of not less than £20,000, company cer, BUPA, pension, insurence, etc. Relocation to our new HQ Weet of Reading will be provided if necessary.

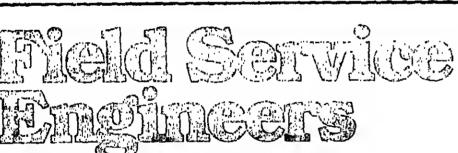
IIII DIGITAL RESEARCH

For an immediate interview pleese telephone Tony McGrath or Karen Whelan on 01-637 9611.

MANAGEMENT&

Suite 201/6 Albany House 324 Regent Street London W1R 5AA 01-637 9611

EXECUTIVE SELECTION



Various UK locations c £10k plus quality car.

Our Client is a rapidly expanding subsidiary of a powerful Dutch based multi-national Organisation, controlling some 100 Companies worldwide. The UK Company markets and supports a range of high quality Computer Graphics and Simulation systems.

As a result of our Clients high reputation, the Company has recently won the UK

maintenance contract for Autotrol CAD systems, which are based on the Univac V77 family of processors, and equipped with a Tektronix tube with either Calcomp or Versatec plotters. In order to effectively service this commitment, our Client seeks to recruit a number of

experienced Field Service Engineers, to support Clients in various locations throughout the UK.

Proven experience of hardware support to component level on the Sperry Univac V77 range of machines is essential. Further experience of Graphics and/or CAD systems would be an obvious advantage as would previous contact with Pertec magnetic tape devices, CDC disks and plotters or Tektronix 4014's.

Applicants should have a good qualification in either Electrical and/or Electronic engineering, preferably a Degree, followed by a number of years practical experience in the field. In addition to an attractive starting salary, other benefits include full use of a Volkswagen Passat Estate car, free BUPA and a contributory pension scheme which includes free life

assurance. Relocation assistance may be available, dependent upon circumstances. If you enjoy working in a professional environment, contact Ian Payne now on 021-236 3781 (24 hour answering service) or alternatively send him a brief CV at the

Initial interviews will be carried out in your nearest SCR regional office before the end of October.

If you know all

there is to know about

the V77

and need

a fresh challenge

-read on!

Specialist Computer Recruitment Ltd

London WIM 5HS 01-935 0571/485 0481

husensway, Birmingham B3 3.1 021-236 3781

Willemsparkweg 92 1071 H.M. Amsterdal 010 3120-780947

TELEPHONE: OF 353 7141 (24 HOURS)

SYSTEMS ANALYST

£11.500

Greduate with 1 or more years' expariance of SYSTEMS ANALYSIS, prefarably in a manufacturing environment.

TEAM LEADER

SURREY

Working within a small depertment. Abla to control project, also experienced in SYSTEMS DESIGN and muet be willing to do some programming and act ee a good all rounder.

ANALYSTS BERKSHIRE

£13.500

TP DL/1 anvironment. Strong DL/1 required. Candidetas must be willing to take a lot of reeponsibility and preferebly be either SALES or FINANCIALLY orientated.



ANALYST PROGRAMMERS & PROGRAMMERS

Un to £13,000

LONDON and S.E. ENGLAND

Minimum of 5 years' exparience of which at least 2 must be ON-LINE and DATABASE systems. Candidates must have worked on either IBM, UNIVAC, DEC or HP3000 equipment and pro-grammed in COBOL.

PROGRAMMER, REAL-TIME MACRO-II

Preferably with a minimum of 2 years' expariance of Real-Time ASSEMBLER programming on DEC PDP-11/LSI-11 Equipment. Willingnaes to work in high level languagee is required, software design and good stendards of documentation ere eseential. Candidates must be willing to traval for short duretions, and a knowledge of ELECTRONICS would be an edvantage.

APPLICATIONS PROGRAMMERS

With experience of a Relational Databasa Management System. Also iMS, DB/DC, COBOL programmers with 2 to 5 years' exparience, preferably with a BANKING and or FINANCIAL back-

Please contact: BRIDGET KOTCHIE, SHUBROOKS RECRUITMENT Almners Priory, Almners Road Lyne, Nr Chertsey, Surrey KT16 0BH Telephone: Chertsey (09328) 66812

Licensia No. 505 806

OKLAHOMA, U.S.A. MAJOR WORLD AIRLINE

The state of the s

A YEAR'S TEMPORARY ASSIGNMENT FOR ANALYST/PROGRAMMERS ACP PARS EXPERIENCE \$35,000 PLUS SUPERB TRAVEL BENEFITS FREE TRAVEL TO AND FROM THE U.S.A.

HELP WITH FINDING ACCOMMODATION, RELOCATION ALLOWANCES, ETC.

Our clients are a major world airline based in the heart of North America's "sun-belt" where the standard of living is higher but the coat lower than in the U.K. It offers a delightful living and working environment. They have an urgent requirement for Analyst/Programmers with experience of systems, using ACP PARS which could have been gained in reservation able applications areas. Essentielly, experience with airlines using the same This:

This is an excellent opportunity to escape the oncoming winter in Europe with the henefit of being directly on our client's payroll, thereby benefiting from their excellent travel facilities, particularly within the U.S.A.

Interested applicants should telephone BOB BOWER for further information and to arrange an informal meeting as quickly as posable.

Ref: CW2110/4

HUTTON EXECUTIVE SELECTION LTD, HUTTON STREET, LONDON ECAY SHE

SYSTEMS CONSULTANTS

MAIDENHEAD, BERKS. £9,000-£14,000 + Car

MSA (Management Science America) Limited, the world's leading suppliers of packaged application software, seeks Consultants to provide full support aervices to the sales force and customers on the following range of packages:

ACCOUNTS PAYABLE INVENTORY AND PURCHASING PURCHASE ORDER CONTROL

You should have systems experience in one or more of the above ereas and be 25 to 35 years old with an analytical mind, a positive outgoing personality and enjoy meeting customers and solving business problems. Mobility is important as you will be visiting client sites in the U.K. and occasionally overseas.

Even in today's conomic climate, the applications software industry continues to thrive and it's continued growth is assured. These roles are seen as an exceptional opportunity to build on your systems background and acquire valuable business experience through extensive training and day-fo-day work involve-

Fringe benefits are excellent and include a quality car, BUPA, annual bonus and excellent pension scheme.

For further information, please confact MARK IRENS, Advising Director quoting reference CW2110/5

HUTTON EXECUTIVE SELECTION LTD. HUTTON HOUSE, HUTTON STREET, LONDON ECAY, SHR.

TELEPHONE OF 351 7141 (24 HOURS

Systems Engineer Brussels

The Commission of the European Communities wishes to recruit a Systems Engineer for the following responsibilities:

- Studies prior to the selection and installation of software and special development work connected with implementing it on the Computer Centre facilities;
- Technical liaison with manufacturers and training of programmers responsible for systems operations.

Candidates, mele or female, preferably aged between 26 and 32, must be nationals of one of the Member States, and know two Community languages, with a knowledge of technical English as a necessity. They must also possess an appropriate university degree, together with experience of the basic software and superstructures of the VME/B system on ICL.

Salary and terms of employment will reflect the importance which the Commission attaches to the post. Candidates selected for interview will be given fetll particulars.

If you are interested, please send n detailed curriculum vitue to the following address, giving the reference ISL/82:

Recruitment Division, Commission of the European Communities, rue de la Loi 200. B-104 9 Brussels

The closing date for the receipt of applications is

The Commission of the European Communities

is searching for

Bystems Analyst &

Programmer Permanent Jobs

CLAYTON Leicester CDMPUTER (0533) ERMICES 558146 (Aggy)

FDR

CLASSIFIED

ADVERTISING USE

DIRECT LINES

CONSULTANCIES

(01) 661 8787

DIRECT ADVERTISERS

THE UNIVERSITY OF LEEDS

DEPARTMENT OF

APPLIED MATHEMATICAL

Applications are invited for the post of COMPUTER OFFICER in the above department. Candidates should possess for should expect shortly to possess for should expect shortly to possess! Ph.D. in some branch of existence or angineering relevent to the Departmental interests, which is eministy in the latest of continuum machanics, estrophysics, mathematical physics, and markets analysis. The appointment will be made for a fixed period of up to deal year.

Balary at an appropriate point or the IA scale for Research and Anal-ogous Stell (CSSS)-C1 (108), accord-ing to age, qualifications and exper-

Further Information on this post can be obtained from the Head of De partment, Professor F. A. Goldswor thy (0532-431751 act 6382).

try (0532-451/51 ard 5352).
Application forms end turther parti-tulars may be obtailed from the Registrar, the University, Leads 152 3.17, qualitag reference number 1/12. Cleating date for applications (November 1862.

MANAGER-COMPUTER CENTER

The Ideal cendidete will have an M.S. or B.S. lo computer science or the equivalent, a minimum of 3 to 5 years experience, a solide knowledge of structured enelysis and programming techniques, and some project management experience. Fluent English, knowledge of French is desirable.

The comouter center supports the research, teaching, end edministrative functions. It is equipped with two Decaystem 20's. The maneger is responsible for all aspects of the computer center including staffing (12) project management, budgeting, plenning, system configuration, and system accounting.

Applicants are requested to send C.V. or resume to : CENTRE INFORMATIQUE INSEAD Boulevard de Constance — 77305 FONTAINESLEAU

Lloyd Chapman **Associates**

01-1597761

D.P. RECRUITMENT SURREY, SUSSEX, KENT, BERKSHIRE

SALARIES TO CE13,000 + CAR We are currently assking, on behalf of clients based in the above areae, paople with experience of DEC, ICL or IBM equipment end a good knowledge of MACRO, COBOL, RPGII, SASIC, CORAL or FORTRAN. Applications include linencies, computarised type-setting (should aposk French), stock control, production control at

control etc.
Also sought a person with broad experience of minicomputers and a knowledge of the motor trade,
prepared to travel throughout the U.K. in a consul-

if these positione which offer ettrective seleries u to £13,600, end in some instences e car, interest you or you are seeking new horizone then contact me immediately. DEREK STANLEY

Tel. 0293 514071 9 s.m.-6 p.m. ATA COMPUTER RECRUITMENT 34 The Boulevard, Crewley COMPUTER RECRUITMENT

Western Home Counties Salary from £20,000 to £30,000

Salery neg. Minimum 2 years as 18M with COBOL.

SOFTWARE ENGRS & PROGRAMMERS For various companies based in London/Hama Caunties/ Europe/Scotland/Sristolareos.

neteries from £6,000/£15,000. SOFTWARE ENGRS Farnborough, Hants. SALARIES FROM £7-10,000, seed under 30 with a minimum of INC and must have real-time Software design and Programming experience. It is advantageous to have programming exp. on DEC or 18-18-bit Microprocessom.

SOFTWARE ENGINEERS Vary stiractivo saleries + full relecation package; et less 26 years of age and experience in Control and Communications Systems, HOST/TAROET Software Cavelepment Systems. Gema sxp. in Mas-

Brentwood, Essex - c. £8,000 + Benefits At least one year RPG 1t to work for a friendly company in excellent surroundings. Floxitims working can be arranged. For an application term for these and many other vacancies we am contracted to fill, please send your coupon to Colin Arneld, Boach-wood Applintments Register, FREEPOST, Londan W3 96R (no

TELEPHONE 01-992 8847 (24 hours)

Beechmood

TRAINEE/JUNIOR **PROGRAMMER**

Keen, enthusiastic end desperate Tops graduate (averege marks 80%) seeks e position with a compeny offering prospects for e bright, hard working 20-yeer-old, treined in atructured Cobol 1 year's operating experience. Available for immediate employment. Any erea considered.

For e copy of my CV end course report pleese phone Merk Gillhem, 01-304 2020 or write, 2 Ruskin Avenue, Welling, Kent.

FIELD ENGINEERS - EVERYWHERE EAST MIDLANDS

Our clients are leading measufecturers in their fields. All offer — growth, security, secondition and opportunities for carear development.

MICROS — SCOTLAND, LONGON, STRMINGHAM, AVON

MINIS — SCOTLAND, N. LONGON eff9.5K + +
American meaulecturer of super minis — very fast — chip level work —
training and serly promotion.

ARRAY PROCESSORS — LONGON, MANCHESTER

GETIK + + +
Again HAW and SAW involvement - chip level work and prospects for suppor
for suitable angineers.
All above jobs offer usual flaid benefits, car, GUPA and so an. Call KEITH
WALUS and clash in on your computer experience with any of the above or
many other leading companies using our renowned service.

ALLTRONICS PROPLE (AGY) 01-543 4844

Z80 ... 8086/88 ... 6502/9 **PROGRAMMERS**

An opportunity to develop with an applications software market leader.

We're ayoung, Midlands based company that's astab-lished itself as a market leadar in applications software We/ve come a long way, and we intend to go further.
Hance our immediate vacanciae at all levels, from Programmer to Management, for sultably qualified people with experience of high and low level programming of Z80, 8086/88, 6502/9 processors or similar.

Successful applicants will be required to work on a variaty of commercial application packages such as word processing, data-base management and report generation systems, in addition to development work on the latest eretion of micro-computers and more familiar applica-

lons for both single and multi-user situations. The attractive, negotiable salary peckage includes BUPA membership and, where appropriate, assistance with relocation excenses.

Interested? Then in the first instance, send your datelled CV to: Department CB, Roytis Personnel Services, Bank House, Cherry Street, Blimingham B2 5AL.

Retail Business Systems c. £10,000 + cer

C. LIU, UUU T COP

The U.K. Retail Sector is ensuring its future profitebility by investing heavily in computer business systems. Herbert and Sons are a British Company, long established in the retail capital supply market. We will son be launching a most advenced, hand held, data capture system to ensure our continued expansion in this marketnings.

merketpieca.
You will be responsible for enalysing and customising business solution systems.
Applicants must have a minimum of 2 years sales support experience, a kean business acumen, be able communicators, comforte bie in senior management negotietions and proficiant in the management negotiations and proficient in the design of systems, analytical work and programme customisation. Much time will be apant in customer contact so you must be Irea to travel extensively throughout the U.K. from a base close to the M11 on the Essex, Suffelk and Cembridge borders. Considerable career prospects will be linked entirely to parsonal performance.

 $\Omega_{\mathcal{L}}$

HERBERT

Writs, enclosing a brief C.V. to The Personnel Director, Herbert and Bone Limited, 18 Rookwood Way Hsverhill, Buffolk. Telephane Haverhill (0440) 703551

DATA **PROCESSING** MANAGER

A unique opportunity exists for a Date Processing Man-eger within an international esize organisation based in Maldatons, Kent.

The successful applicant should have at least 2 years' COSOL Programming experience together with an ability to design and write programmes. The teek leding the successful applicant will be to computerise the whole company as quickly as possible, integrating in the most economical way Sales Analysis, Order Processing, Word Processing, Financial Modelling, General Accounts and Menagement Information.

At the present time the company is using a Philips P340 for order processing only and DECMATES for word processing and fevours DEC equipment for expension.

To be considered, submit your curriculum vites, includ-ing current Selary and a telephone number on which you may be contected. Please sand your application to:

The Menaging Director ELECTRAUTON LTD Etom House Greens Road Industrie Kent

SENIOR PROGRAMMER DESIGNER **RPG II AND COBOL** TO £14,000

LONDON

A leading international commodity company has an immediate opening for a top calibre senior programme r/designer who has good all round commercial/finencial applications experience.

You will need all the following requirements:

Good degree: Bueinese studies or computer selence.

- 2-3 years RPG II and COBOL.

 Good communication skills and professional menner. Your major involvement would be in the areas of programming, designing, tailoring packages and installing these systems in Europe and USA. For more information, please ring Shirley Francia quoting Ref: 6383.

Lloyd Chapman **Associates**

URGENT CONTRACTS

NOV. START NOW NOV. DEG. NOW NOV. START NOW NOW NOW NOW NOW ISM MVS Merk IV VAX/CORAL 66 ISM SYS 34 (oversees contracts) ISM MVS SOS DOS/VSE COSOL CICS HP3000 COSOL VAX FORTRAN (Detebese) Z80/RM 380Z Expert DG MV 8000 FORTRAN (Selemie)

MONTREAL ASSOCIATES (SYSTEMS) LTD. 01-553 2944 (4 lines) emp. egy. 98-100 HIGH ROAD, ILFORD, ESSEX IG1 106

BOX NUMBERS

Box number replies should be eddressed to

c/o Computer Weekly
Ouadrant House, The Ouadrant
Sutton, Surrey SM2 SAS

Research Fellowshin in Formal Verification Techniques

Applications are invited for the post of Research Fellow. In connection with an SERC-funded project involving the development of techniques for the rigorous apsolitication of the behaviour of digital systems and, by using formal logic with computational sesistance, varifying that proposed implementations meet such specifications. Many of the techniques will be analogous to those used for the formal varification of software. Applicants should have a doctorate in Computer Science or Maihematics, or have comparable research experience in a relevant area. The post is available immediately at a starting salery in the range aris. The port is available immeditivity at a sixting salery in the range of 88375 to 57285 and is tenable for three years. Application forms and tenter particular as a swellaste from the Senior Assistant Registrary. Faculty of Natural Salerices, Cherrical Laborstory, The University, Caractury, Kent CTZ 7NH to whom completed applications should be rejurned by 18 November 1962. Please quote ref A25/82/CW.

SOMERSET THE BLUE V.C. SCHOOL WELLS (tt-18 mixed comprehensive, 1328)

For January or April 1983, teacher to take charge of COM-PUTER STUDIES, Scale 2. The school is very well squipped with two 3802 two P.E.T. and ten B.B.C. Acoms. The person eppointed will have every opportunity to develop the subject even further.

as possible, to the Head at the School with curriculum vitee and names of two referees.



COMPUTER OPERATOR lequired at Moray College of Further Education Etgin Rel. 596/82

Applications are invited from experienced computer operators for the above newly reated post. Experience of operating VAX 11/750 and PDP/1t equipment an edventige eithough training will be given. Some date preperation will be required.

salery scale £5065-£5376 per

Application forms and further details from Oirector of Men-pawer Sarvices, Woodhill House, Aberdeen AB2 21.U. Cosing data t November.

GRAMPIAN REGIONAL COUNCIL

This may sound a strange question, but with the number of 'opportunities' offered in the Computer Trade Press it must be difficult knowing which positions actually justify the cliches, 'career progression', 'job satisfaction', 'exciting prospects, etc'. These positions do.

The salaries offered are between £9,000 and £15,000 and you will be joining a team of professionals with high standards and high expectations. Individual ability is quickly recognised and rewarded and the opportunities within this growth area

Our client is one of the largest and most reputable organisations in the Computer Services Industry. Their products and services are widely used by over 2,000 companies in industry, finance and commerce and by many departments and organisations in central and local government, education and professional organisations. The present positions are within the finance division, who develop and market a proven banking system used by over 60 banks, in 120 sites, across 40 countries.

Correspondent of an all them in other Comments and

Responsibilities involve liaison with clients, project management and implementation planning, so an ability to communicate effectively at all levels is essential. A wide experience of commercial/banking systems on an IBM 4300 is required. The technical consultant need not have a banking background, but will have approximately 3-4 years designing systems and have some experience of converting functional specifications to technical specifications.

. 编数数据编件数据 (1) 100 and 100 an

Working in a small team, you will have the responsibility for programming, design, analysis and documentation for development projects. If you have 2 years COBOL (preferably with some Assembler experience) gained on the IBM 4331 or 4341 and either have some analysis experience or an interest to gain some - this is your entrance into banking.

If this sounds like the challenging environment in which to further your career, contact Richard Milsum on 01-734 7394, or 01-958 2553 after 8pm or at weekends.



43-44 GREAT WINDMILL STREET, LONDON WIV PA TELEPHONE: 01-734 7394 24-HOUR AINSWERPHONE

ELECTRON HOUSE GROUP

Electron distribution company require on ISM SYS.34 Senier Operator at their new installation. Knowledge of SEU useful. Salary c£6,400 p.e. Please send full CV to: S. Rebinson (DPM), Electron House, Crey Avenue Orpington, Kant

MEDICAL RESEARCH COUNCIL APPLIED PSYCHOLOGY UNIT 18 CHAUCER ROAD, CAMBRIDGE C82 28F

SENIOR TECHNICIAN

SENIOR I ECTIVICATION

The successful candidate will be layoured in the advanced design and construction of electronic and other equipment with a reapposability for its final use by inychologists. Movimum gestification sixto or established the secondary of the successful superior and the secondary of the second

FARNEOROUGH COLLEGE OF TECHNOLOGY LECTURER GRADE I IN COMPUTING

Applicants should have good industrial/communication experimental experimental experimental experimental experiments of COSCIL and/or microscillations. Salery range (\$355 to £926) per annum

Ferther particulars from The Staffing Officer, Fernborough College of Technology, Soundary Road, Fernborough, Hartis, OUL 4888 Cicabia data: October 29, 1962



CSP, a DEC OEM based in Nottingham, is a vigoroua, expanding company which offers good salaries, and a stimulating working environment,

Telephone or write with brief caleer details to.
Ken Gale, Sales and Marketing Director,
Computer Systems and Products Barrasford House, Goldsmith Street, Nottingham, NG1-517 Telephone, (0602) 416 156

DEVELOPMENT MANAGER SYSTEMS ANALYSTS

化二十二烷 化二氢异乙烷

The Diesei Division of Rolls-Royce Motors Ltd., a Vickers Company, occupies an Important position as a leading manufacturer of high-speed diesel engines used in a utomotive, marina and industrial applications throughout the world.

Currently our DP installation has an IBM 4331, 1 megabyte system, shortly to be upgraded to 4 megabytes, operating under DOS/VSB with CICS and DL/1 just installed. A new IBM 4341 mainframe is planned for next year.

Amajor project involving IBM COP ICS application software is imminent and an exciling opportunity now exists for DP professionals to join an expanding team dedicated to the successful installation of manufacturing systems across the company. n of Rolls-Royce Motors Ltd., a Vickers Compan

Development Manager Systems Analysts

With extensive experience appropriate to our installation, who can demonstrate e positive and successful career path within an engineering or production environment.

Team management, liaison with software suppliers and user departments and budgetary control are eli important, aspects of the eppointment.

With at least 4 years formal analysis and COBOL, experience preferably with COPICS applications in a manufacturing of production environment. Both at these appointments offer the successful male or female candidates challenging opportunities in a busy developing department with genuine promotional opportunities.

ent.

The employment packages are excellent including compelitive salary contributory penalon and health scheme and generous relocation essistance to this most at the five part of the country.

Plains write how with details of signous little and salary to mail actions and salary to Mike Owen, Personnel Manager, Relia Royce Motors Ltd.

Disset Division.

Whitebarts Road, Shrewshars.

ROLLS

110 =

GIVE YOUR REGARDS TO BROADWAY IN PERSON

Computer Systems Davatopment Incorporated ie an axpanding Consultancy Company with Haad Offica in Broadway and a flourishing ragional offica in Taxes.

CSD is iteelf a aubsidiery of a British Company and was incorporated in the State of New York in 1977. Our clients are all major corporations, - Banking, Insurance, Otl, Conaumer Goods, Communications

ANALYST PROGRAMMERS — \$25,000 to \$40,000

To join us aarly in 1983.

You must have at least 5 years experience (tess if you have e Computer Related Degree) Above Average Ability, Adaptabil-try, Enthusiasm, Salf Motivation and a desire to work hard for

Primary needs are for: IBM COBOL CICS IMS OS or DOS and other languages considarad aspeciatly BAL.

- Fraa Madical Insuranca
- **Paid Ovartime**
- 3 Waaks Vacation
- Intarast Fraa Loan

Ganarous Relocation Atlowanca

Rosemary Sarafian, Vica-Prastdent, New York, witl ba intarviawing OCT 25-29

To arrange your confidential interview phone Sue Ashby 01-836 6775 Evanings 0844 53531

Computer Personnel International
30-32 Southsmpten Strest, Londen WC2. 01-836 6775

THE BEST LITTLE **SOFTWARE HOUSE** IN TEXAS

London Systems & Softwara is the Taxee office of Computer Systems Davelopment of New York.

PROGRAMMER ANALYSTS

Are required to carry out work for our clients in Datlas and Houston - Major Manufacturing, Enargy and Financial Cor-

Ralocate to the flourishing Southern United States to beat the

Salaries \$25,000 and up.

A minimum of 5 years experience in large Data Processing facilities. Commercial applications is assentiat, a BSC in Computer Science or a related field is desirable. Experience in the following areas is raquired together with a professional atti-tude and a willingness to work hard.

IBM COBOL ASSEMBLER OS JCL DOS IMS or other Data-

CICS TSO/SPF or almilar.

Company banafits Includa ★ Frae Madical Insuranca ★ Paid Overtima ★ Generous Relocation Expenses ★ Interest Free

> Cathy Ham will be interviewing OCT 25-29 Phone and make your appointment NOW Cali Sua Aahby 01-836 6775 Evaninga 0844 53531

(1383)

Computer Personnel International
30-32 Southampten Street, Lendon WC2. 01-836 6775

A CHANCE TO RING ONE OF THE BIGGEST CHANGES SINCE ALEXANDER GRAHAM BELL

The next decade will see some of the most important advances in telecommunications since the phone was invenied, and as always Plessey will be right at the forefront of developments. We have recently acquired a company in the USA to broaden the world-wide markets for our products, while at home we have just been appointed as lead contractor for the supply of System X

Now we need to recruit additional Bueiness Systems specialists in order to ensure that our efficiency keeps pace with our growth.

Currenlly our hardware comprises an ICL 2946 mainframe, a CMC Reality mini-computer and a Wang VS80. Facilities also exist to communicate with the Plessey Computer Centre at Addlestone. which houses one of the largest ICL configurations in this country.

PROJECT LEADER -up to £10,000

We ere looking for aomeone with aubstantiel practical experience in the use of IDMS, GEORGE 3 and COBOL. Additionally, some experience of VME/B would be a distinct adventage. A qualificetion in Business Studies, Computer Science or other ailled discipline and at least five years general business experience, is deairable.

All selaries are negotiable according to qualifications and experience and there are a range of big company benefits including BUPA, pension scheme and generous relocation cosis where appropriate.

SENIOR SYSTEMS ANALYST -up to £8,500

We are just about to emberk on full scale production of digital exchanges and require an additional Senior Analyst. This is a experience of computer systems allied to a record of

challenging management post and cerdidates must have a degree or diploma in Business Studies, or all least 5 years

If you would like to know more about these positions, or about the exciting future ehead of our compeny, write to Mike Horgen Menagement Development & Resourcing Executive, Plessey Telecommunications Limited, Edge Lene, Liverpool L7 9NW, or telephone him on 051-220 4830.



- up to £7,400

A minimum of one year's commercial experience using COBOL preferably on an ICL mainframe, is our requirement for these appointments. Successful candidates will work initially on projects associated with the ICL 2946 but would be expected to work on the other hardware if required.



UNDERUSED **SOFTWARE ENGINEER NEEDED**

Our client needs a young HNC/Degree standard software engineer who feels rather underused.

They feel thot they can offer a cliallenge that will leave you suitably exhausted and fulfilled by the time the teo trolley comes round!

You will work in a small; very specialist team within a larger company in the communications field.

Apart from software writing, testing oud definition, you will olso be involved in customer liaison and other peripheral octivities.

Ideal candidates will possess a qualification in either Electronic Engineering or in Computers with 1 to 3 years' experience in writing programmes in Coral 66.

As supervision is kept to o minimum you will need a foirly flexible self-motivated outlook.

Salary is negotioble around £8,000 p.a. to start plus g relocation expenses. The locotion is within the South-Eost. To discus this opportunity telephone Paul Hecquet on 044-46

Please quote Ref: 1/14/S

The Electronics Recruitment Company

18 Station Road, Burgess Hill, West Sussex R1 H5 0DE

04446 47301/2/3/4

BOX NUMBERS

Box number repties should be addressed to:

ICL ICL 2900 VMEB, TPMS CDSDL Progs.; v. urgani ICL SYS. 25 Progs.; urgant ICL ME 29 TP CDBOL Anelyst/Prog. HONEYWELL HDNEYWELL DP SS Prega.; urgent HDNEYWELL LEVEL 64 GCDS OS 2000; Native Cobel Progs.; DEC DEC VAX 11780 CDSDL Proge. DEC VAX CDMMS — HDLLAND PDP 11 AIMS Prega. urgent. ISM IDMS Detabose Consultent; urgent
PL1 TSD/SPF Programmers
IBM CICS DL1 IMS DP Pregs. urgent
ISM OS CICS SYS. Preg.; HDLLAND; urgent
IBM MVS SYS. Pregs.; HDLLAND; urgent
IBM DOS VSE SYS Prog.; HDLLAND; urgent IBM SYS 38 Anal/Progs.; verious IBM 30 31 ADF Prog.; urgent IBM SYS 34 SSP RPGII Prege.; MAAPICS; urgent ISM MYS RDSCDE Pregs.; urgent
TANDEM to IBM 3033 OS; urgent
ISM 4341 DDS VSE CICS DL1 CDBDL Anelyet/Prege.; urgent
ISM SYS 34 RPGII; Treining for IBM SYS 38 given; NEW YDRK; \$25,000 PRIME PRIME 250 FORTRAN Pregs.; urgent ARGUS DSC 55 CORAL 68 Pregs. T1990 Microprocesser 86 Pregs.; Dalense industry; verious REDIFON REDUFDN to ISM 4341; all lovels Phona Mika, Jessie or Ctaira We have a reputetion for moving quickly and efficiently so for an informal chef telephone us send your c.v. as soon as possible.

COMPUTER APPOINTMENTS

& CONTRACTS TOWN CENTRE, HATFIELD, HERTS.

Telephone Hatfield (07072) 65699 or 69889

Hardware noineers

Singapore.

Our client is without doubt THE most successful Computer Systems. Organisation in the Far East. Through dynamic growth, they trave established a pre-eminent position as the leader in providing controllete systems solutions at the top-end of the technology spectrum. Head office is in Singapore with a number of regional operations covering Malaysia, Indonesia and Hong Kong. These locations now provide the world's most challenging business environment The company install and maintain the full range of DEC/PDF 11 systems, however the increasing popularity of the new VAX 11 equipment has led to a considerable increase in business. To copie with the tremendous demand on their services, they now need to recruit additional HARDWARE ENGINEERS with the experience and conlidence to support and train existing PDP 11 engineers. It is essential that candidates demonstrate a sound knowledge of VAX systems and it is probable that you have had previous experience of working on PDP 11 machines. Flexibility is a key-word, and although based in Singapore, you will be expected to travel throughout the whole Asia-Pacific region. You will be mature, responsible and can work without supervision. Communicative skills are paramount as you will be liaising with customers together with leading and training other professionals. These are outstanding opportunities, not only will you be enhancing

your technical skills and developing your career potential, but also enjoying an exciting lifestyle in an interesting and beautiful part of the

The lax Iree salary is very attractive and first-class accommodation will be provided. Further you will enjoy a number of other benetits associated with the importance of these positions. The initial contract is for one year and is definitely renewable.

Knight have been recruiting for this client regularly during the last Iwo years and recommend you apply without delay. We will send you comprehensive details and arrange immediate interviews. Please quote Ref. MT/400

Knight

Knight Computer Services Limited 14 Old Park Lane, London W1Y 4NL

01-4914706

HUNTERSKIL

Amember of the Computing Services Association

A WISE CHOICE

PERMANENT

SENIOR PROG (RPG II) MIDDX £12,000 Min. 3-4 yeers' RPG II, of which 2 must be on Sys 34 to work on centralised development involving MAAPICS Implementation.

ANALYST/PROG NORTH HANTS c£8½K Min. 18 months' IBM COBOL, preferably OS but not essential to work in a manufacturing environment.

SYSTEMS PROG MANAGER HERTS c£13½K Must have e min 5 years' D.P. exp. currently project les der preferred on IBM site. Candidates must heve DL/1, expoeure in manufecture an edvantege.

SENIOR ANALYST Senior Analyst or project lesdar required by menufacturing concern to be involved in production control development. Senior position with excel-Isnt prospects.

ANALY6T HERTS c£9,000
Min. 2-3 yesrs' enelysis with exp of Design to implementation. Cendidetes with IBM/manufecturing exp heve an edventage.

SENIOR PROG BUCKS to £11,000 Cendidetes muet have et leest 3 years IBM COBOL, preferebly in DOS environment with CICS or online exposure. Also applicents must have hed some supervisory experience, excellent prospecte plus

c£8,000 + CAR ANALYST/PROG HERTS Compeny is ideelly seeking e person with CMC SOVEREIGN exposure to work on development of sccount peckeges.

CONTRACT

COBOL ON DEC OR COBOL WITH KNOWLEDGE OF RSX 11 M (X4) IMM, 6 MONTHS' START. VRX COBOL ON NCR WITH TOTAL IMM. 6

For further information contact:-

Chris Chehsde HOWLETT COMPUTER SERVICES **FREEPOST**

Leighton Buzzerd Bedfordshire LU7 7BR Telephone: 0525 384735/382555 or 029 672 221 evenings/weekends

HOWLETT

£13,000-£18,000+CAR

DATA PROCESSING

MANAGEMENT CONSULTANTS

Touche Ross & Co. are a major international

to join our London-based team.

recommendations.

project management.

practice are first class.

accountancy and consulting practice. Due to continuing growth, we need more consultants

Our assignments cover all facets of data processing and information technology, giving our

consultants excellent opportunities to broaden

their experience. We advise top management

on strategy and assist them to implement our

Applicants, aged 27-34, should have a good

programming, systems analysis and computer

Although most of our work is in the U.K., con-

sultants will also be able to participate in over-

seas projects, for which generous supplements

are paid. Career prospects within this expanding

Please send a comprehensive career résumé,

including salary history and day-time telephone

number, quoting ref: 2077/CW, to G. J. Perkins.

degree together with varied experience of

LONDON

COMPUTER SERVICES

Hampshire Based Systems House

Senior

Salary to £13,000 + Benefits including relocation where appropriate

Our client, a fast-growing systems house, part of a major industrial group, wishes to recruit a number of Senior Systems Analysts to join teams developing systems for prestige companies operating in the European Manufacturing and Distribution sector. techniques and operating on the Digital Equipment VAX range of hardware. Career development prospects are excellent.

We are seeking committed, ambitious professionals who have the background and potential to meet the challenge of a fastexpanding operation. Age is less important than the ebility to show a successful track record in manufacturing and distribution systems development with either a systems house, a manufacturer or a large user. You are likely to be a graduate or equivalent, enjoy the challenge of solving problems in a demanding client/consultant environment, and looking for a significant opportunity to advance your career based on personal performance.

Salaries are attractive and opportunities are available for promotion to grades which carry a company car.

To apply: Please contact Brian Posties.

Terguson Thorley Bowles Associates Limited

International Dersonnel Consultants: 15 Clarence Street Staines Middlesex TW1848U Telephone Staines (0784) 59247. Telex: 88(4148)

The smart salesperson argues that there is no point in fighting over common ground, according to Ivan Newman

Getting the customer on your side is a lot like going into battle

between you and the competition? They have their system together with its strength and weaknesses; you bave yours, also with strengths and weaknesses. Theirs is green display, yours is amber.
So what? The only real dif-

ference between you and the rest is

So bow can you make all the difference? In a way, it's like any general with his troops — he trains them, he tests them, he practises them in mock battle. His troops was the thing between him troops

are the thing between him and the enemy. That is what "srming for competitioo" is all about.

Let us go back to selling basics and take one way of selling — call it "oiche selling". Here the customer is faced with a whole phananx of competing equipment lanx of competing equipment, each proposal claiming (and perhaps even proving) its ability to do the required job. How does the customer choose which submission is most suited to the job? Providing that there is no clear

leader in terms of price, delivery, features and performance, then the competing equipment is placed within the "common ground". The smart sslesperson argues that there is no point in fighting over the common ground, but that the best chaoce of success depends opon features oot shared by other

It is to assist in finding this niche for the feature(s) that arming for competition is of help.

The best way to arm for competitioo is to stage (as the general does) mock combat on training courses. Once the troops have grasped the methodology on exerise they should be in a position to repeat the exercise in the field.

Stage 1 in the process is to analyse one's own product thoroughly and review this with the sales

Stage 2 is to obtain the same information about the competition. Clearly a more difficult task, for no "army" publishes its dispositions to aid the "enemy". However the sources of competitive information sre legion - Datapro, Auerbach, IDC not to mention exhibitions, trade shows and sales literature.

Stage 3 is to sit down and design role-play case-study material. If at sll possible, this material should be drawn from exper-ience, to give it realism. The customer profile chosen should sllow both your own and competitive equipment to have both common ground and uniques. Ideally authentic tender requests slinuld form the hasis for this stage.

Stage 4 involves briefing the

troops. As with any mock battle, half the troops have to be the enemy for the purpose of the

Stage 5 - let battle commencel

Your team and the competitive team withdraw with customer profile to decide tactics. The "customer" also formulates his team response on various topics

with the instructor's help, of
course. There then follows a
series of interviews in which the opposing teams probe the intri-cacies of the customer's job, his needs, requirements and priori-ties. Needless to say the customer situation is designed so that special features can be brought into play. The aim of the game is to outflank the op-position and draw the deal away from common ground and his features to your strengths. But not just far features' sake but rather becsuse they match a need (possibly hidden) which

Stage 6. After the game has run a prescribed number of rounds, a halt is called and a progress review is made. The only is now on the instructor to identify the progress made by both parties and advise where further

Stage 7. This is the penultimate



conduct an orderly retirement.

"The boss has gone over the top with this sales training exercise."

round with the combatants moving in towards their objec-tives, or fighting a reargustd. Stage B is the evaluation. Which

icani has achieved what objectives and what did the customer think of it sll? At this point the participants should start to conclude that it did not really matter which party they represented, the moral is the same.

Namely, that by skillul strateyou! By training to strategise sales gisiog, questioning and probing it is usually possible to lead a situations, the saleforce should be able to get away from merely situstion into the areas you are displaying in excellent memory for best qualified to fight on and features and become more skilful in the trie of questioning to pull win on. The corollary is that if the deal will not let you do that enstomers' occueived requirements then you should "qualify-out" into areas only you can satisfy. or, to maintain the analogy,

lean Norman product promotion manager for OFIS at Burroughs. So here is the difference then -

COMPUTING SERVICES

CONTRACT SALESPERSON c. £15,000 p.a.

Howard Organisation, a laading international group of service companies, wishes to appoint a salesparson having a succassful record in selling computing consultancy programming and related services.

The successful candidates, having become experienced in the U.K. placament and contract market will be interested in improving their carear devalopment in the internstional market.

This activity will be based at our U.K. head office, Edgwsra, and a profit-sharing schama is envisaged.

As a first stap along the path to a great future please contact Danise Wilkinson on 01-952 8092 office hours or batwaan 6 p.m. and 8 p.m. on 01-953

> Howard Organisation International Ltd. Russell House, 140 High Street, Edgware Middlasex, HA8 7BS

CONTRACT SALES EXECUTIVES

Target Earnings £25,000+

Company Car

1. 165 day 155 day

Trident Computer Services PLC require edditional experienced sales executives for their highly succeesful contract staff division, based at their Heed Office in Fernborough, or Branch Offices in Birmingham and London.

We ere looking for people who have the desire, shillty and self-motivetion to work in e busy seles environment. A successful seles record is essentiel.

Remuneration and benefits are axcellent with on-ter £25,000+.

> Benefits Include: Company Cer Entry Into Private Patients Pien Shere Option Scheme

Apply in writing with full curriculum vitae to: STEVE WHITING OR BILL EVANS

TRIDENT COMPUTER SERVICES PLC
Trident House, 38/44 Victoria Road, Parnborough, Hants.
or Telephone FARNBOROUGH (0252) 516141 MON.-FRI. 9sm-5.30pm or \$420 00000 or \$252 \$46224 respectively greatures and wantends



TRICENT ARE LICENSED BY THE DEPARTMENT OF EMPLOYMENT AS AN END-LOYMENT AS AN END-LOYMENT LICENSE HUMBER: SEID) 1464

. 4 3

Touche Ross & Co, Management Consultants Hill House, 1 Little New Street, London EC4A 3TR. Tel: 01-353 8011. A member of the Management Consultants Association and The Computer Services Association.

COMMUNICATIONS SALES

LONDON

TO £14,000 + COMMISSION COMPANY CAR

A leading international computer services company sceks a Sales Executive to take total responsibility for the sales of two of its new communications packagea.

The Marketing Department is providing a flow of sales leads, technical support is excellent and all that is now requited in a professional Sales Executive to spearhead the drive into this dynamic market place.

Yuu should be familiar with communications protocols (IBM or DEC preferred) and have a track record in selling communications systems

This is an opportunity for a self-motivated pro-fessional to build up a new area of business and to head the sales effort as the department ex-

For further information, please contact MARK IRENS, Advising Director, quoting reference

MUTION EXECUTES STREETION LTG MUTTOMHOUSE, MUTTO N STALLT LONGON EC47 EMP

LOCAL AREA **NETWORKS**

MANCHESTER SALES ACCOUNT MANAGER MAJOR ACCOUNTS CIRCA £25k + CAR

To manage a portfolio of prestigious commercial and financial accounts in the North-West with a view to selling our client's highly successful range of financial terminals and distributed data processing aystems.

This is a Sales Manager-Designate position.

LONDON (CITY) COMMUNICATIONS CONSULTANT CIRCA £17k + CAR

To act in a pre-sales consultancy role with some marketing reaponsibility. Candidates must be totally au fait with local area networking and understand communications software. This is a technical conaultancy role involving, for example, SNA or other manufacturers' equiva-

For either of these two important positions with the same manufacturer, please contact BOB BOWER for an interchange of information.

Ref: CW2110/2

ACCOUNT DIRECTORS

£24k GUARANTEED PRESTIGE CAR

WEST COUNTRY/HOME COUNTIES/ CENTRAL LONDON

Our clients manufacture and sell a wide range of distributed data processing systems and local area networks to large commercial and financial organisationa.

Their highly succeasful U.K. subsidiary requires an additional ten professional Senior Sales xecutives in varioua locations.

Applicants should be aged approximately 30 to 45 and have a minimum of five years' new business sales experience with a manufacturer of mini or mainframe equipment. It is essential to have a proven auccessful track record in the commercial or financial sectors as our clients are only interested in candidates who can justify the salary commitment they are prepared to make.

Telephone BOB BOWER in the strictest confidence for further information. Ref: CW2110/3

systematicc

Martin and Voorhees Associates

Transportation and Planning Consultents

Systematics is an expanding computer software company and consultancy specializing in technical and professional applications. Our software activities extend from microcomputers to mainframes, and we have our own PRIME computer. Due to an increasing workload and successful microcomputer developments, we have a very senior tavet requirement for a

PRINCIPAL CONSULTANT Salary c.£15,000

Reporting directly to the Mensging Olsector, this person will manage significant sepects of the company's business, including major projects, technical developments and new merket intertives. The successful candidate will possess mensgarist skills these a very strong beckground in computing. A knowledge of FORTRAN is required; familiarity with transportation planning and an interest in microcomputers will be an advontage.

Applications in writing, including full CV, should be sent to: Therese McCaul

Systems lica 112 Strend London WC2R 0AA

KAYNAR U.K. LTD.

SERKSHIRE NEAR HEATHROW

ANALYST/PROGRAMMER

We have an immediate requirement for an experienced Analyst/Progremmer to essist in the implementation of MAAPICS evatem onto a wall-established ISM 34 system currently using MMAS.

Previous ISM 34 experience preferred together with a working knowledge of RPG II. Experience of MAAPICS would also be an adventage but not essential.

Kaynar (UK) Lid. are apaciellet in the fiald of electric lastenere monufectura and our attractive terms will include four weeks' annual holiday, pension end life assurance achain, subsidiased dining facilities together with a compelitive salery.

Application with full deteils of your career should be sent to R. M. BALE, FINANCIAL DIRECTOR, KAYNAR (UK) LIMITED, BLACKTHORNE ROAD, COLNBROOK, SLOUGH, BERKSHIRE.

A MICHODOT (4) COMPANY



Lloo Systems Developmenta, currently firitain's cumber one nanufacturer of Osta Communication Systems and products, are repending their operation to include a brand-new purpose-built leadquarters, situated at the edge of the Chiltern Hills, adjacent to inction 5 on the M40 in the village of Stokes church.

Opening shortly, the new Headquarters will expand the company's anufacturing capability considerably. To meet this demand there are two vacancies for the following parsonnel

Technical Sales Engineers are invited to join us rd sell our most edvanced Osta Network and Communications systems. Previous experience in the Date Communications Inclustry would be a definite advantage.

This is a challes ging role in a competitive market place and requires smbitious, cothusiastic personalities. There is, of course, a highly competions salary and a company car.

Sales Support Engineers

to assist the field sales force in the engineering sapects of our systems and products. Previous experience in the Data Communications Industry would be a definite advantage.

There is free membership of 2UPA, valuable incentive achemes, ouributory pension fund and a Sports and Social Club.

LION SYSTEMS DEVELOPMENTS

COMPUTER CAREERS **JINAUSTRALIA** Opportunities!

Over the past five years we have been returned by several stralian companies and have assisted more than (N) Inmilies resmove to Australia. Opportunities exter for PROCIRAMMERS & ANALYSTS without least three years experience.

For details 8e brechair write to: Computer Careers itt Australia, CANSMO, Agent General for Victoria, VI. rora House, Strand, Lundon WC2B-LCi.
Please enclose a self-addressed label 1 hiterrieus will be held ni Condon, Labrienelt and Manufaster by December and January

CHARLES BRODLEY & ASSOCIATES MANAGEMENT AND THE PARTY OF THE

Sales Executives **Currently Earning**

£14,000 - £25,000 Michael Linford Associates wish to hear from

Senior Sales Executives and Sales Managers whose track record to date has demonstrated superior ability.

We are an established consultancy who specialise in the search and selection of sales and marketing executives for the computer industry.

Perhaps your current appointment is fulfilling your career needs, but nevertheless, you are interested in future opportunities, attematively, you may be actively seeking a new appointment now.

You may be looking for:

★ A more sophisticated ★ A higher income ★ A totally professional product

★ A more authoritative role peer group. Or, more likely, a combination of all these factors, then

perhaps its time you spoke to us. Bear in mind, the best position for you may never be advertised. in the first instance, telephone Steven Baker on 01-370 2012/2013-Or send a brief CV for his

attention to the address below. Any approach will be treated in the strictest confidence.



Michael Linford Associates Ltd.

Executive Search Consultants File 159A Gloucester Road, London SW7. Toluphone: 01-370 2012 2013

SALES AND MARKETING OPPORTUNITIES

INVEST IN YOUR OWN **CONSULTANCY SERVICE** WITH ATLAS

THE ONLY COMPANY THAT **GUARANTEE** YOUR RECOMMENDATIONS

It's hard going it alone and it's costly. You need to be

- a good analyst
- a good marketing man a good administrator

You need to advertise, to build up a name for high integrity and, to do the job properly, you need experience of hundreds of systems suppliera. In fact, you need computerised information retrieval.

.The Atlas Computer evaluates client's specifications against systems marketed by over 1100 suppliers.

Atlas supply all this except your expertise. Ailas are unblased and not affiliated to any Computer Company.

Send your CV to Maurice R. Hamlin, Managing Director ATLAS COMPUTER CONSULTANTS LTD. Manchesier Road, Bolton BL2 1EX Telephone (0204) 24117/8/9 Chorley 64658 during evenings

Experienced Sales Exacutives

Trainee Ssies Executives

to £12K basic + c £9K bonus + car

to £9K basic + c £6K bonus + car

As a result of expansion our client, e leading internetional manufacturer of multi-user, package-based business commercial computer systems, wishes to eppoint additional experienced and trainee sales executives for the

MANAGER NEW BUSINESS

MINI/MICRO SYSTEMS

Our client is an established activers house rochaultency with a highly successful and profitable business built on sophisticated mini and micro-based solutions for the leading intermotional accountancy firms.

A dramatic increase in recommendations to their clients had created the need to appoint an experienced selection with a successful track record in large mini-based systems and a broad commercial knowledge to head up this new section.

For further information contact David Lloyd supplies Ref.

For further information contact David Lloyd, quoting Ref. CW/897.

LLOYD CHAPMAN ASSOCIATES

ComputerWeekly

Copy for classified advertisements should be received by 3.30 p.m. Monday prior to Thuradsy publication. Advanced space reservations are advisable and should be low:

RECRUITMENT CONSULTANCIES

(01) 661 8787

DIRECT ADVERTISERS

(01) 661 8080

CLASSIFIED

01-499 7761

£25X | QUALITY CAR

Midland Bank Venture Capital Limited own 40% of Atlas Equity

Experienced Salas Execulives will ideally be aged 25-45 yrs with a minimum of three years experience of setting

For further information contact Herry Clerk on 031-226 8419 (9em-7pm). Please quote Ref. 191/108

ROYCE RECRUITMENT 22 WALKER STREET EDINBURGH

COMPUTER SALES



SALES EXECUTIVES TIME TO CONSULT THE SPECIALIST?

When you are dealing with the major fectors in your life you can only afford the best, and few things are more important then the development of your cerear. Certainly, that is how the major computer menufacturer feel shout their personnal selection and why such compenies as CONTROL DATA COMPUTES TECHNOLOGY, DATA COMPUTES, AND COMPUTES TECHNOLOGY, DATA COMPUTES, AND COMPUTED AND

We fully understand the needs of such compenies as well as knowing about the many job opportunities that never appear in the press. These well respected names depend on our professional skills and confidentiality. Can you afford less?

LONDON & SOUTH MIDLANDS & NORTH

OEM SALES REPRESENTATIVES

Stundy Computer Services require aggresive Sales parson in develop Disc Pack Malintenance and refurbishment services to new and existing accounts reporting to the Sales Objector.

Selery commensurate with experience. Car Plus expanses.

(ACC)

commercial computer eystems to End Ueers preferably wilhin the business/eccountrincy/ finencial applications

Trainee Seles Executives. Although we use the term treinee, candidales aged under 30 years, must heve either previous seles experience in a related field (e.g. peripherals, micros, bureau etc.) or heve a very relevant support and/or applicatione background and a sound working knowledge of commercial business systems.

addition to an excellent Income package we offer

exceptional Ireining and enreer prospects, o cer end the benefits normally associated with a major company. For further information contact

Write or telephone for application form to:

N. C. Goodwin
Drundy Computer Services Ltd, Lower Monk Street
Abergavensy, Gwent NP7 5YO
Tel: 6573-5017

COMPUTER SALES

Smell computer maileting company west of London is looking for a trained mar-leting executive bernaam the ages of 25-35 to join a salesteam. We require an extrovert person with good aducation, prefereity a graduate. A back-ground in computing would be an advon-tage. Earnings would be besed on selery plus commission.

Please write with CV to Box 1229 .

SAUDI ARABIA SOFTWARE/ HARDWARE PDP 11 To £24K Tax Frss DEC 11. 20/80 TOPS

Systems Programmers. All DEC POP 11 Computer

So, when a saleaman can-not be found it could mean that he is disorganised, dis-honest, lazy, inefficient, certainly not management msterial end posaibly looking for a new joh, However, the most likely failing is the lack of en effective call planning

A call planning system is simply a device which helps

Excellent salaries + car Marcol is a highly successful, well established business working at tha

leading edge of software technology.

Outstanding Sales Executives will progress as far with us as their individual energy, intelligenca, enthusiasm and ability will take tham. .We are currently looking for two people

Systems consultancy services to Commerce & Industry. An exceptional Sales Executive with considerable experience in the marketing of projects and resources.

Hotel Industry. A self-starter with experience in selling services to the hotel industry. The job requires a unique blend of skills and will be extremely challenging and interesting to the successful candidate.

Marcol offers a progressive career path, equity participation and a full range of first class benefits.

Take a share in our success!

Send a full c.v. or ring for a confidential discussion with Penny Bailey, Personnel Manager, Marcol Computer Services Ltd. 60 Queen's Gardens, London W2 3AF Telephone: 01-402 9355/0995

Benefits of a call planning system

Quality of Management -27

SALES BIT

HAVING spent two weeks on the ramifications of maintaining effective terricals for the week(s) ahead and takes ioto account such the saga of sales documenta-tion by discussing the merits of call planning.

A call planning system has several significant benefactors as geography, call frequency, client category, and special circumstances and priorities.

The essential elements are

■ Time/day

Company

Name of contact

Purpose of call

■ Telephone oumber

Appointment or cold

ments, it is important that a cell planning system is ac-

companied by efficient, geo-

graphically-oriented client

records in order to facilitate both sensible routeing end

the possibility of uneche-duled calls on existing and

prospective clients in the

the call plan is generated two or three weeks in ad-

vance, rather than just one week altead. Most people manage to keep their diaries full at least a week ahead, so

a two-week lead time tends to generate less "husy sig-

als" and is more likely to

evaid the pressure of

squeezed-in eppointments. Another good discipline is

to arrange the first and last appointments for each day before those in the middle.

It gives much greater flexi-blity for fitting in other ap-

pointments and is usually

worth at least a couple of

Alan Williams

extra calls a week.

More next week.

li is also preferable thet

same locality.

It is a system which tells fits, not least of which is its facility for comparing the "what was achieved" of the the salesman and hia supporting colleagues who, when, where and why, et s call report with what was intended. It also allows the single glance. It is an essential device in terms of both salesman to atart each day efficiency and discipline. A without the demotivation of single form is all that is reeffectively being unemquired to create efficient means of communication.

ployed.
Yet these are not the only mifications of operating s call planning system,

A salesman who is out of touch with the people supporting him is likely to be out of touch with sales

Secretaries often have Overnight address and considerable difficulty telephone number By sending a copy of the contecting salespeople whenever there is an emergency. Yet it is essential that rapid communications with the salesman is possible et completed tabulation to interested parties prior to departure, all supporting all timee if the immediate people are in a position to reaction that problems and opportunities usually deprovide the right kind of assistance and generally do mand is to he put into effect. their jobs properly. As for making appoint

Many salespeople operate like undercover agents, creeping from one clandesune meeting to another, as if they were peddling heroio rather than selling ethical products, hresking cover only to collect their expenses end attend the monthly me-

It is uodeniable that where there is mystery concerning the ectivity of any salesman, there is also e onsiderable likelihood of inefficiency. People seldom hide those facets of their nature which migbs increase their esteem among their fel-

COURSES

expert systems is being held on December 20 at the Department of Mathematics, Statistics and Computing at the Polytechnic of North London. It includes demonstrations of systems in action and information on how to build such systems. The Japanes Fifth Generation Project is automatic expert systems, embodied in very large scale, integrated circuits. Their deadline is 1990. Fee is £40. and applications should be made before November 11. Denails: 01-607 2789 ext

Por personnel exper-ienced in design, BIS Ap-plied Systems has groupes which aims to improve the efficiency and reliability of

A SHORT course the resulting computer designed to review the system. It is a workshop principles and main features which covers all aspects of Called Structured Systems

Design, this five-day residential course costs £615 + VAT. It will be held in Worthing from December 13-17. Details from Cherry Bigmore on 01-267 9237,

PUZZLE

ANSWER =



MODELLERS

A major user of technical programmers has a need for FORTRAN Programmers with experience of mathematic modelling to work on new and advanced weapon systems. Nice company and early CW42/1

IBM ASSEMBLER **SUPPORT**

TO £12K + CAR

This famous IBM Software manufacturer requires first grade IBM Assembler Programmers to act in a support role for their internationally famous products. A Saper job.

SYSTEMS ENGINEERS

HERTS/SURREY

\$8,000 to £11,500 (+ CAR)

We now have eight manufacturers/systems houses looking for all levels of qualified Engineers with Mini-Micro Software or Hardware backgrounds. Some of the following famillarity is required: Assembler, Pascal, Fortran, VAX machines, RSX, RTL2, Data Communications: Message Switching Software, CP/M or UNIX. Top perks (including a car) for some of these top jobs, plus possible trips to USA.

BASIC + PROGRAMMERS

TO £11,000 BERKS. & C. LONDON

Are you experienced on RSTS/E? Good. Then give us a ring to see how you match up. We also have vacancies for you in the CITY, EGHAM & WELWYN GARDEN CITY areas. NICE ONE. CW42/4

SYSTEMS ANALYSTS FOR BANK

Insurance or Banking experience as a background, you now want to move on! This International Bank with both large and small IBM
computers is calling for attention from you to
insual new Customer Service applications. Perks
include foreign travel, low mortgage rates and
generous holidays, plus a well-developed career
path.

ITEL RAMIS COBOL

IBM PL/1 VM/CMS

HON L66/64 IDS TDS

PRE- & POST-SALES HERTS, MIDDX. \$8,000 to \$13,000 **PROGRAMMERS**

SURREY & ANALYSTS

Things must be picking up! We now have six MINI computer manufacturing companies with offices around the HOME COUNTIES who require well-qualified people with the confidence to deal with clients in a pre- and post-sales situation. to \$10,000-\$18,000

CITY

to \$10,000-\$18,000

If you are in the age range of 25.35 with a good degree or equivalent, and the multiple skills of baving worked in more than one Commercial environment, then now is the chance to benefit from your background. Three major consultancies require your skills now as a Programmer CW42/6

Analyst or Project Leader. All vacancies require a programming background with ASSEMBLER, BASIC, FORTRAN, CORAL or COBOL experience on MINIS. The jobs will provide an exciting and satisfying career, so please ring me now.

CW4218

RPGII PROGRAMMERS LONDON & HOME COUNTIES TO \$11,000 SOFTWARE SALESMAN

LONDON & HOME COUNTLES 10.211,000
The call never code for well-qualified RPGII and
RPOIII people who know where they are going.
Programmer and Analyst/Programmer vacancies
exist for 1½ years + experienced people in the
CANTRAL LONDON, BROMLEY,
WINDSOR, HORSHAM, ENFIGLD and
CATERHAM areas. All the companies offer
super opportunities and the banking vacancies are
extra special.

MICRO COMPUTER SALESMEN

HOME COUNTIES

Are you experienced in this new and exciting field? If you have at least one year selling microbased products then ring us to discuss the excellent kit and selling package this up-and-coming company has to offer. Looking forward to hearing from you!

We have five Software Houses who are looking for that rare bread of person. Someooc who can sell software products. Experienced people ONLY please phone Michael for an lotimate conversation.

+ CAR

TO 522K

to £17,000 QE

ANALYST/PROG C. LONDON IBM CICS COBOL **PROGRAMMER** ICL IDMS VME/B S. ENGLAND IBM Banking Systema ANALYST

CONTRACT PEOPLE WANTED NOW!

PROGRAMMER

PROGRAMMER

PROGRAMMER

Telephone Alan on 01-458 8535 for details

Recruitment Consultants UNIVERSAL COMPUTER ASSOCIATES LIMITED, Impact House, 20 Accommodation Road, London NW11 8EP 01- 458 8533

SOUTH EAST

C. LONDON

KENT

HERTS

CONTRACT ASSIGNMENTS

Join the growing team of ABRAXAS Contract Professionals Positions in London and the South unless otherwise stated

★Denotes URGENT

OVERSEAS

ICL 2950 SME 62 + TP ICL ME28 TME TP OOBOL ICL ME28 TME TP (Spoken ICL ME29 TME TP (Spoken

AME\B COBOL PORTRAN IDMS, VME/B

ICL

▼ YME 2900 IDMS YME 2900 IDMS ▼ ME29 TME COROL ★ ME29 TME COROL ★ 2900 YME/B IDMS TPMB

IBM

BYS 34 RPOH MAAPICS SYS 34 RPSH SYS 38 Banking Experience PL/I CICS OS VSI COBOL

FINANCIAL OS ICL COMMERCAL **FORTRAM** COSOF CICS DF/I CICS COSOF DOS\ASE AN Analyst/Programme Programmers Analyst/Programma Programmers Programmers Programmers Programmers Programmers Programmers 10P Aspet

OTHER URGENT REQUIREMENTS:

HP 3000 IMAGR QUERY COROL
HONEYWELL LAS IDMS COROL
MINI FORTEAN GEOPHYSHCAL
OORAL 68
Programmers
Programmers
Programmers
Programmers PEREIN ELMER 9832 REXIIM FORTRAN DECRET

Programmers System progs. Analyst/Prog.

FOR IMMEDIATE ATTENTION AND A CONFIDENTIAL DISCUSSION OF YOUR NEEDS CONTACT CLAIRE OR LYNN OF OUR CONTRACT **RESOURCES ON 01-388 2061** tt337i

ARRAZAS 357 Eastes Read London NW1 3AL

SALES EXECUTIVES

SALES EXECUTIVE - DG MINIS Young Aggressive Salee Executive with good track record to sell DG Minia Southern England besed Southsmpton. High Salery neg. Csr to 25K.

ACCOUNT MANAGERS - DDP - MINIS To sell DDP systems, minis/meinfremes, office automation. Proven track recordbased West London. Sesic £10k. 2-litre cer.

SALES EXECUTIVES - SUPER MICROS To sell Super Micro Networks. Besed in London. Basic to £10k. Guarantes. Car of pick

DEALER MANAGER - OEM - MICROS

Experienced Micro Seles Executive to hendle e deeler network Northern Home Countles/Midlands. 8K Besic nsg. Cer — 18K.

SALES EXECUTIVE — BUREAU/SW

To sell bureau and SW services. Based SW London. Experienced Seles Executive file only. Saste Negotiable. Profit Shering. Car.

Plue meny other good seles vecencles.

Telephone for en eppointment

SDS CONSULTANTS

150 Regent Street London W1R 5fk Tel: 01-439 525 COMPUTER PERSONNEL CONSULTANTS

AFTER 7.30 p.m. & WEEKENDS 0444 458804

TRAINEE SYSTEMS ANALYST

250 3217/8.

n Electronic Printing Systems for service in London EC. Some formel education and computer operations/progremming experience deelreble. Poet will: re-quire customer lieleon. Age 20-26. Selery £6000-7500 depending on experience. Contact Bruce Garvey or Chris Merles on: 01-

ROGRAMMER/SENIOR PROGRAMMER SYSTEMS SUPPORT PROGRAMMER £ Neg. + Car

CAMTEC Electronics require two key staff to help property in pile expension in the Data Communications makes. Carried is already setting the standards for X25 Padat Assembler products and developments are underwind bridge Ring and Ethernel.

Applicants for Appl Applicants for both positions should have a good by an infiliation or organization assembler and a house stage of the following seembler and seemble s Assistance with relocation expenses would be presented to the printing contact Vic Toy or Cava Drury on (1953) 1951 write engineering a detailed CV to:

PROGRAMMERS

are required by the AVON & BRISTOL COMPUTER UNIT serving the County of Avon and the City of Bristol.

The Unit is committed to an intensive programme of development in the areas of Management Information, Accounting, Payroll, Personnel, Education, Housing, Property and Social Services supported by an SMB IBM 4341, CMC and Wang minicomputers with an expanding network of on-line devices and microcomputers.

Opportunities are available for employees to develop Opportunities are available for employees to develop their careers in a dynamic organisation. Staff are employed as Systems Officers and may participate in all stages of the development and support of systems, as well as developing expertise to a high level in porticular areas.

Applicants must have at least one year's experience and should be proficient in PL/1.

In appropriate cases, assistance with removal expenses, lodging allowance and legal fees will be available. Salary: Up to £8,733 (award pending).

For further details and an application form, please contact the Director of Personnel, The Council House, College Green, BRISTOL BS1 STR. Telephone: (0272) 26031, ext: 247, quoting reference: CU 089. Applications returnable by 4 November, 1982.

UNIVERSITY OF ESSEX Lecturer/Senior Lecturer in Teletraffic Engineering in the Depertment of Elactricel Engineering Science

Applications are invited for a post of Legume Printy Scientics.

Applications are invited for a post of Legumevillation Lecturer featery scales: Lecturer – £1,270 to £18,180 in the Department of Restrical Engineer of \$1,270 to £18,180 in the Department of Restrical Engineer of Science for appointment as soon as postable in the area of Trettle Analysis of Modern Communications Networks and Switzining Systems. This post is being funded by British Talector for an Intelligentic of Switzinian anglesering, computes and neverte appetence in communications anglesering, computes anothering, computes appetence in communications anglesering computes appetence in the section of the soft of the section of the secti

considered
The Operturent of Electrical Engineering Bellance specialises in Electronic Systems,
with particular research interest in Telecommunication Systems, industrial Electronics.
Crowl Studies and CAD, Display Systems, Computer Systems and Miloro processor
Applications, and Signal Processing. Applications, and figural Processing.

Applications into copiest, including a curriculum vites and the names and addiseases of two felves, should seek the Registers (AG/148/CM), University of Essex, Wiveshoo Park, Countries CO 39C, from whom further particulars may be obtained, by 25 honorabet, 1904.

(1344)

POLYTECHNIC

HEAD OF COMPUTER CENTRE

Selery: Heed of Department Grade V with the possibility of Grade VI in appropriate circumstances £14,679.£17,490

The Polytachnic seeks a person with energy, drive and axtensive professional experience to give atrong leadership in this importent senior post. Exciting developments are taking place in computing for teaching, research and administration, including the recent establishment of a new honours degree in Computing and Informatics. establishment of a new noncore degree in Soling and Informatics.
Application forms to be returned by Tuesdey, 10th Novamber, 1982, can be obtained with further perticulars from the Personnal Officer.

Dreke Circus, Plymouth, Devon, PL4 BAA

Data Processing Manager

Somerset

Amey Readstone Corporation Limited is one of the major producers of aggregates, coeted stone and pramixed concrete in the U.K. We ere now seeking en exparianced end competent Manager to control the Office which is responsible for the Company's eotivities in nino counties in Southern and South-Western England.

iles in nine counties in Southern and South-Western England.
Candidata (mala/femeta) should be capable of demonstrating their ability to achieve deedlines end to manage a team of Progremming, Operational and tystems and net working would be an edventage.

1983 which will involve eignificent developmente from in view of the responsibility invisaged within the epolity of the responsibility invisaged within the epolity in the considerad that anyone under the ege its requirements.

Salary negotiable. Oood conditions of employment.

Applications in writing to Mr. E. P. Rowley, Regional Accountant, Amey Roadatone Corporation Limited, Southam Region, Stoneleigh House, Froma, Somerset 8A11 2H8.

113301

There are a wide range of opportunities with Consultancies, Hardware Manufacturers and Usera at the current time. U.K.-based positions are located in London, the Home Counties, the South Weat and the North West. Even if your background does not match any of the positions below we would still be interested in hearing from you as these are only a few of the positions currently available.

focimical/Software **Systams Programmers**

IBM 3033/3081 MVS/SPF - Support plus T.P. Software development.

Softwara Specialists To develop compilers/translators, operating systems, utilities and software products. ADA, CORAL 66, MASCOT, PDL or assembler

experience required. Software Daaignars & Programmers £9-13,500 Process control-Mini/Micro-based, Assem-

bler, CORAL, PASCAL, etc. Also required for simulation, mathematical modelling and weapons control. Hardware Deaignars

Mini/Micro-based process control systems. Also for Micro-coding, Analogue signal processing, Data comms and Logic design plus a wide range of Turnkey projects.

Hardware Development Engineers Radar tracking and control, CMP/EMC Technical and modelling. Microwave development for E.W./A.T.C. aystems.

Softwara/Firmware Design Programmere £8-12,000 Distributed processing, Database, comms, protocols, ISO 7 layer architecture and micro-band firmware.

CAD Specialiets Design and development and product support. One project is to generate design tools for circuit productions and PCB design.

Communications

Lagranualeanich an Chonadardh **Communications Network Designars**

Capable of sizing complex communications network systems for a Command and Control project. Systems Engineere For large systems configuring, selection and sales

support. Data/Voice comms, LAN, Protocol & VAX knowledge ideal. Taam Leaders Realtime micro-based systems. Assembler essen-

tial. P.O.S. experience useful. Deaignars and Programmars MOD Command and Control Weapons system-

F1600. Also for Avionics, E.W. and Military systems, PDP11, CORAL, FORTRAN or assembler Software Dasignars & Programmars

Communications, SNA, X25 or COS experience required. Taam Laader c £10.000

MOD Shipborne System - DEC/VAX, PASCAL.

Commercial

Project Managers to £20,000 + car For large fixed price Turnkey projects in commercial and financial sector.

Softwara Product Spacialist to £18.000 + car Development, support and Product assessment in the commercial aector. IBM, ICL or DEC useful.

Salesparsons c£16.000 + car For small businesa syatems, Bureau services, word processing and network

Dasigners & Analysts to £14,000 For financial transaction driven applications.

Designers & Programmers For realtime commercial VAX/VMS-based systems.

£9.000 + benefiteIBM 4331 DOS - COBOL/CICS/DL1. Insurance application.

William Care Permanent and contract appointments with

attractive salaries/fees + benefits.

GERMANY iBM 8100 Assembler Progremmer IBM 8100 Oesigner/Progremmer — new on-line system iBM MVS Systems specialists
IBM iMS 08/0C COBOL Programmers Softwere testing — telecomms systems DEC/VAX Systems specialists Project Plenner/Coordinator
Project Leeder — complex softwere/compiler project

Some Germen ebility required for certain projects

HOLLAND

Systems Engineers — Fire Control and Guidence systems

ITALY

RTL2 Progremmer, RSX11/MACRO 11 usefui.

DUBLIN IBM 4341 OOS/VSE Systema Programmer. CICS/DL1 pref.

MIDDLE EAST Technicel Writer - Hardwere/eoftwere eystems Trenslator — Arebic/English translation

For further deteils on ell these vecencies. please contect Jenny Delrymple-Hay or len Murrey West (dey to 9pm) 01-493 2947 (24 hour ensephone) or (weekends) Beaconsfield (04946) 4579, quoting ref. 9935.

DALROTH & PARTNERS LTD. 4 HALF MOON STREET, LONDON, W1

ENGINEERS

7K-10K plus company car/Surrey

Due to rapid expension we ere seeking a microcomputer enginear. The successful applicant will have
appropriate experience in the maintenance and repair
of computer equipment. He/she will have a positive
personality and be able to operate effectively with minimal aupervision. Salery will be commensurate with experience.

For further details please contact Miss 8, Geibreith Fergusson Computers Ltd. 4 Pyrford Road West Bylleet

Burrey Tel: (08323) 45330 --

UNIVERSITY OF LIVERPOOL RESEARCH ASSISTANT

OMPUTATIONAL MATHEMATICS Applications are invited for his post of Research Assistant in the Department of Statistics and Computational Methematics, to work on the solution of partial differential equations on parallel processors Applicants should have, or shortly expect to receive, an advanced dagree in mathematics or a related discipling, and experience with parallel processor configurations. The project is financed thittely to ten months which it is hoped will be renewed for up to the eyest.

The select will be set the rate of C6,850 per sevum.

(1266)

DID YOU KNOW SOMEBODY DOES TEACH COMMERCIAL DATA PROCESSING?

We are a Ploytechnic spacialising in vocationally-orientated data processing courses at degree and sub-degree level. We are interested in deta processing, professionals with a minimum of about five years' experience, and a Degree of its equivalent to fill a number of yearandes at Lecturer flor Sanjor Lecturer or Principal Lecturer level.

Candidates having experience in one or more of the following areas would have an advantage, delabase systems, transaction processing systems, computer networks, microcomputer-based systems, finencial modelling applications. 8ALARY SCALES: LII. 18868-110173 Ber 111022 SL 10173-111984 861 1128 18 PL 211931-113280 8er 115018

An application form and further particulars may be obtained from the Personnel Officer, Sunderland Polytechnic, Langham Tower, Rynope Road, Striderland, SR2/EE or telephone Sunt Berland 78231; but 11; Costing date 5th November, 1982.